

Ren-01-125.ST25.txt
SEQUENCE LISTING

<110> Norris, Susan R
Lincoln, Kim
Abad, Mark Scott
Eilers, Robert
Hartsuyker, Karen Kindle
Hirshberg, Joseph
Karunanandaa, Balasubramanian
Moshiri, Farhad
Stein, Joshua C.
Valentin, Henry E.
Venkatesh, Tyamagondlu V.

<120> Tocopherol biosynthesis related genes and used thereof

<130> Ren-01-125

<150> us 60/400,689

<151> 2002-08-05

<160> 79

<170> PatentIn version 3.2

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Thr Gln Leu Arg Ala Arg Arg Ser Leu Ile Ser Ser Ala Val Ala Thr
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Asn Ser Leu Leu His Asp Val Gly Ala Thr Val Ala Val Leu Gly Gly
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Ala Tyr Ala Leu Val Leu Ser Phe Glu Ser Leu Thr Lys Arg Asn Val
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Ile Met Gly Arg Lys Phe Gly Ser Thr Lys Ile Pro Tyr Asn Pro Arg
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Lys Ser Trp Ala Gly Ser Ile Ser Met Phe Ile Phe Gly Phe Phe Ile
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Thr Gln Leu Arg Ala Arg Arg Ser Leu Ile Ser Ser Ala Val Ala Thr
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Asn Ser Leu Leu His Asp Val Gly Ala Thr Val Ala Val Leu Gly Gly
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Ala Tyr Ala Leu Val Leu Ser Phe Glu Ser Leu Thr Lys Arg Asn Val
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Ile Gln Gln Ser Leu Ser Arg Lys Leu Val His Ile Leu Ser Gly Leu
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Leu Phe Val Leu Ala Trp Pro Ile Phe Ser Gly Ser Thr Glu Ala Arg
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Tyr Phe Ala Ala Phe Val Pro Leu Val Asn Gly Leu Arg Leu Val Ile
130 135 140

Asn Gly Leu Ser Ile Ser Pro Asn Ser Met Leu Ile Lys Ser Val Thr
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Arg Glu Gly Arg Ala Glu Glu Leu Leu Lys Gly Pro Leu Phe Tyr Val
Page 4

165

170

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Leu Ala Leu Leu Phe Ser Ala Val Phe Phe Trp Arg Glu Ser Pro Ile
 180 185 190

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 35 40 45

Ser Ser Ser Arg Phe Pro Ala Thr Lys Ile Arg Lys Ser Ser Leu Ala
 50 55 60

Ala Val Met Phe Pro Glu Asn Ser Val Leu Ser Asp Val Cys Ala Phe
 65 70 75 80

Gly Val Thr Ser Ile Val Ala Phe Ser Cys Leu Gly Phe Trp Gly Glu
 85 90 95

Ile Gly Lys Arg Gly Ile Phe Asp Gln Lys Leu Ile Arg Lys Leu Val
 100 105 110

His Ile Asn Ile Gly Leu Val Phe Met Leu Cys Trp Pro Leu Phe Ser
 115 120 125

Ser Gly Ile Gln Gly Ala Leu Phe Ala Ser Leu Val Pro Gly Leu Asn
 130 135 140

Ile Val Arg Met Leu Leu Leu Gly Leu Gly Val Tyr His Asp Glu Gly
 145 150 155 160

Thr Ile Lys Ser Met Ser Arg His Gly Asp Arg Arg Glu Leu Leu Lys
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Gly Pro Leu Tyr Tyr Val Leu Ser Ile Thr Ser Ala Cys Ile Tyr Tyr
 180 185 190

Trp Lys Ser Ser Pro Ile Ala Ile Ala Val Ile Cys Asn Leu Cys Ala
 195 200 205

Gly Asp Gly Met Ala Asp Ile Val Gly Arg Arg Phe Gly Thr Glu Lys
 210 215 220

Leu Pro Tyr Asn Lys Asn Lys Ser Phe Ala Gly Ser Ile Gly Met Ala
 225 230 235 240

Thr Ala Gly Phe Leu Ala Ser Val Ala Tyr Met Tyr Tyr Phe Ala Ser
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Ile Ser Ile Ala Ser Ala Leu Val Glu Ser Leu Pro Ile Ser Thr Asp
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<400> 17	
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gcgacctacc taggggctgt ggtgttaacc gcggaactgc ttaaccgcct ttccctcagt	120
ccggcgagg taactcgtaa aattgtccac atcggagcgg ggcaagtggg gctgattgct	180
tggtggttga gtattcctgg ttgggtgggg gcgatcgccg gggtttttgc cgctggcatt	240
gcagtgtctt cctatcggtt gccgattttg cccagcttag aaagtgttgg ccgccacagt	300
tacggcactt tgttttacgc ccttagcatt ggtctattgg tggggggatt tttctccctt	360
ggactgccga tatttgcggc gatcgggtatt ttagtcatgg cctggggcga tggactggcg	420
gccctggtgg gacaaagggt ggggcgtcac cgctaccaag tctttggttt ccgcaaaagt	480
tgggagggca ctctcaccat ggtgttgggc agtttttttg tcacggttgt atttcttagt	540
tacaccttcg gcttcacagt tattgtcctt gttgtggctg ggacggtggc gatcgccagt	600
gctggactgg agagcttttc ccgctggggc attgataact taactgttcc cctgggcagt	660
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<210> 18
 <211> 1188
 <212> DNA
 <213> Synechocystis PCC6803

<400> 18	
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ccgacaaccg agataccggg ggatccgggt gaaaatgatt caacagcacc gccaaaaccg	180
gtgagaatca cctgtccaac agtcgccgga acttatcccg tcgttttatt cttccatggc	240
ttttatcttc gcaactactt ctactctgac gttcttaacc acatcgcttc gcatggttac	300
attctttagt cccacagtt gtgcaaatta ttgccgccgg gagggcaagt ggaagtggac	360
gatgctggaa gtgtgataaa ctgggcatcg gaaaacctca aagctcacct accaacttcg	420

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gtaaattgcta atggaaaata cacctcactc gtggggccaca gccgcggtgg gaaaacggcg	480
tttgcggttg cgctaggcca tgccgcaaca ttagacccat ccatcacgtt ttcagctcta	540
ataggaattg atccagtcgc aggaactaac aaatacatta gaaccgatcc gcatatctta	600
acgtataaac cggaatcttt cgagctggac ataccggttg cagtgggtggg aaccggactc	660
ggaccgaagt ggaacaacgt gatgccacca tgcgcaccaa cggacttaaa ccatgaggag	720
ttttacaaag agtgtaaggc gacgaaagcc catttcgttg ctgcggatta cggacatatg	780
gatatgttgg acgatgattt gcccggtttt gttgggttta tggccggttg tatgtgtaag	840
aatgggcaaa gaaaaaagtc tgagatgagg agctttgtag gtggaattgt ggttgcgttt	900
ctcaagtata gtttgtgggg tgaaaaagcg gagattcgat tgattgtgaa ggatccttcc	960
gtttctccgg ccaagcttga tccttcacct gagttggaag aagcttctgg tatcttcgtc	1020
tagatttgtg ttatgtacta ttatcagagg ggtcttgaat atttgaaaaa cctatcaatg	1080
ttttctagct ccaagctagc tattgttcat gtcctaagtt gcatgtgtat ttttattaaa	1140
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<210> 19
 <211> 1135
 <212> DNA
 <213> Arabidopsis thaliana

<400> 19	
aaaaaaagta aagaaaagaa aaactaataa agaacaaaaa aaatgtcctc ttcttcatca	60
agaaacgcct ttgaagatgg caaatacaaa tcaaatctct taaccttgga ctcatcatct	120
cggtgtgca aaataacacc gtcttctaga gcttcaccgt ctccgccaaa gcagctgttg	180
gtggctacgc cgggtggagga aggagattat ccggtggtga tgctcctcca tggttacctt	240
ctctacaact ctttctattc tcagcttatg ttgcatgtct cttctcatgg cttcatcctc	300
atcgctcctc agttatatag tatcgccgga ccagacacaa tggatgagat taaatcaacg	360
gcggagatta tggattggtt atcagtagga cttaatcact ttcttccagc gcaagtaaca	420
ccaaacctat ccaaatttgc cctctccggc catagccgcg gtggcaaaac cgcgtttgcg	480
gtcgccttaa agaaatttgg gtactcctcg aatctaaaga tctcgacatt gatcggata	540
gatccagtcg atggaacagg gaaagggaaa caaaccctc ctccggtgtt ggcttacctt	600
ccaaactcat ttgacctaga caaacgcct atacttgtga tcggttcggg gcttggtgaa	660
accgctcgga acccattatt cccaccgtgt gcacctcccg gagtgaatca ccgagagttc	720
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ggtgaagaga ggagaccaat gaggagattc gttggtggac ttgttgatc atttttgaag	900
gcttatttgg aaggagatga tcgtgaatta gttaagatca aagatgggtg tcacgaggat	960
gttcccgttg aaattcaaga gtttgaggtt atcatgtaaa cataagtttt tctttagggg	1020
ctgggttttc tattgtcaat atcatcagct tttgttgctt atgggtttac aaacttatat	1080

tgtacaactc tttaagtcac ctcttttgctt acaaaaaaaaa aaaaaaaaaa aaaaa 1135

<210> 20
 <211> 190
 <212> PRT
 <213> Aquifex aeolicus

<400> 20

Met Asn Leu Glu Arg Gly Asn Met Leu Glu Leu Arg Arg Lys Leu Phe
 1 5 10 15

His Phe Leu Ser Ile Leu Leu Leu Ile Ile Pro Val Lys Phe Phe Pro
 20 25 30

Phe Trp Leu Asn Val Phe Leu Phe Leu Ser Ala Ile Leu Leu Asn Leu
 35 40 45

Leu Ile Ile Phe Arg Val Ser Pro Phe Tyr Asn Ile Phe Glu Val Phe
 50 55 60

Ile Lys Leu Phe Glu Arg Glu Lys Asn Leu Glu Thr Pro Gly Ile Gln
 65 70 75 80

Ser Leu Trp Ala Ile Leu Gly Val Phe Ile Ser Tyr Leu Leu Phe Gly
 85 90 95

Glu Asn Ala Val Val Gly Ile Val Val Leu Ala Leu Gly Asp Gly Phe
 100 105 110

Ser Gly Leu Val Gly Tyr Tyr Phe Gly Arg Arg Lys Leu Phe Tyr Asn
 115 120 125

Pro Lys Lys Ser Leu Glu Gly Thr Leu Ala Phe Phe Thr Ala Ser Phe
 130 135 140

Leu Gly Leu Leu Leu Phe Thr Asp Phe Cys Glu Ala Phe Val Ile Ser
 145 150 155 160

Leu Ile Cys Ala Val Leu Glu Ser Leu Pro Leu Lys Leu Asp Asp Asn
 165 170 175

Phe Tyr Ile Pro Val Leu Ala Ser Phe Leu Gly Glu Val Leu
 180 185 190

<210> 21
 <211> 237
 <212> PRT
 <213> Chlorobium tepidum

<400> 21

Met Thr Ala Ile Ala Pro Thr Phe Phe Asp Leu Pro Val Val Trp His
 1 5 10 15

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Asn Val Leu Val Met Leu Leu Thr Ile Ala Tyr Val Phe Ser Val Pro
20 25 30

Leu Leu Met Asp Trp Leu Val Thr Asn His Gly Leu Pro Arg Asp Ile
35 40 45

Ser Arg Lys Ile Thr His Ile Cys Ala Gly Ser Val Ile Val Phe Leu
50 55 60

Pro Leu Phe Arg Asp Gly Asp Trp Ser His Tyr Leu Asn Ile Thr Val
65 70 75 80

Phe Ala Val Trp Thr Val Leu Leu Ile Gln Lys Gly Leu Phe Ala Ala
85 90 95

Asp Asp Asp Gln Ala Val Lys Thr Met Thr Arg Thr Gly Asp Lys Arg
100 105 110

Glu Leu Leu Lys Gly Pro Leu Tyr Phe Val Ile Val Ala Met Ile Cys
115 120 125

Gly Thr Leu Tyr Tyr Lys Gln Phe Ala Gly Val Leu Ala Met Ala Ile
130 135 140

Leu Gly Trp Gly Asp Gly Leu Ala Pro Ile Val Gly Thr Arg Met Gly
145 150 155 160

Lys Met Lys Tyr Lys Val Phe Cys Glu Arg Ser Val Glu Gly Ser Ile
165 170 175

Ala Phe Leu Ala Gly Ser Leu Ala Ala Gly Leu Phe Phe Val Trp Leu
180 185 190

Ile Val Pro Gln Ala Phe Asn Pro Ala Lys Ile Ala Met Ile Ala Val
195 200 205

Ala Ala Thr Val Ile Glu Ala Leu Ser Pro Lys Glu Val Asp Asn Ile
210 215 220

Leu Ile Pro Ala Glu Val Ile Ala Leu Ala Ala Val Leu
225 230 235

<210> 22
<211> 477
<212> PRT
<213> Chlorobium tepidum

<400> 22

Met Gly val Val Met Phe Phe Ile Pro Ser Tyr Phe Ser Ser Asn Phe
1 5 10 15

Ren-01-125.ST25.txt

Tyr Pro Leu Ala Ala Ala Phe Leu Phe Ala Val Val Gly Leu Val Ser
 20 25 30
 Leu Lys Ala Gly Ile Leu Gln Ser Leu His Gly Glu Pro Val Val Thr
 35 40 45
 Gln Glu Gly Glu Arg Val Ile Ser Tyr Gly Pro Val Leu Phe Pro Leu
 50 55 60
 Val Phe Phe Leu Gln Ala Leu Phe Leu Trp Gly Glu His Val Trp Ile
 65 70 75 80
 Leu Gln Ile Ser Met Leu Val Leu Gly Ile Gly Asp Ala Leu Ala Ala
 85 90 95
 Leu Val Gly Thr Ala Ala Gly Gly Arg His Ile Glu Asn Leu Thr Lys
 100 105 110
 Ser Arg Lys Ser Ile Glu Gly Ser Met Ala Met Phe Ile Ser Ser Leu
 115 120 125
 Val Ile Leu Ser Val Ser Ile Phe Val Phe Arg Asp Ala Phe Thr Gly
 130 135 140
 Gly Leu Val Gly Gln Pro Ile Trp Lys Leu Leu Ala Leu Ala Leu Leu
 145 150 155 160
 Leu Ala Leu Leu Val Thr Ala Val Glu Ala Leu Leu Ser Trp Gly Leu
 165 170 175
 Asp Asn Leu Phe Ile Pro Leu Ala Ile Ala Tyr Val Leu Tyr Val Val
 180 185 190
 Asp Val Asn Ser Met Val Thr Ile Asp Gly Leu Leu Leu Gly Gly Leu
 195 200 205
 Phe Ala Leu Phe Ile Ala Ile Phe Ser Ile Lys Val Lys Phe Leu Asn
 210 215 220
 Asn Ser Gly Ala Thr Ala Thr Phe Leu Leu Gly Thr Thr Ile Phe Gly
 225 230 235 240
 Val Gly Gly Met Val Trp Thr Val Pro Met Leu Thr Phe Tyr Leu Leu
 245 250 255
 Ser Ser Ile Leu Ser Lys Leu Gly His Lys Arg Lys Ala Lys Phe Asp
 260 265 270
 Leu Val Phe Glu Lys Gly Ser Gln Arg Asp Ala Gly Gln Val Tyr Ala
 275 280 285

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Asn Gly Gly Val Ala Trp Ile Met Met Val Ile Tyr Ser Leu Thr Gly
 290 295 300
 Asp Pro Tyr Ile Phe Phe Ala Tyr Leu Gly Thr Leu Ala Ala Val Gln
 305 310 315 320
 Ala Asp Thr Trp Ala Thr Glu Ile Gly Thr Met Trp Pro Asn Ala Lys
 325 330 335
 Ala Arg Leu Ile Thr Thr Phe Lys Asp Val Pro Val Gly Thr Ser Gly
 340 345 350
 Gly Val Ser Ile Pro Gly Thr Leu Ala Ser Phe Leu Gly Ser Leu Leu
 355 360 365
 Ile Cys Ser Ser Ala Val Leu Met Asn Val Ser Trp Ile Asp Gln Val
 370 375 380
 Gly Ile Val Thr Ser Leu Leu Val Ile Gly Val Ser Gly Leu Phe Ala
 385 390 395 400
 Ser Leu Val Asp Ser Phe Phe Gly Ala Thr Val Gln Ala Gln Tyr Tyr
 405 410 415
 Asp Pro Ile Arg Gln Lys Val Thr Glu Arg Thr His Ser Ile Ala Ser
 420 425 430
 Asp Gly Ser Arg Val Ala Asn Glu Leu Leu Lys Gly Tyr Asp Phe Val
 435 440 445
 Asn Asn Asp Leu Val Asn Thr Leu Cys Ala Ile Ser Gly Ser Ala Val
 450 455 460
 Ala Tyr Leu Val Val Arg Asn Leu Val Ser Leu Ser Leu
 465 470 475
 <210> 23
 <211> 236
 <212> PRT
 <213> Chloroflexus aurantiacus
 <400> 23
 Met Ser Thr Arg Asp Leu Ile Gly Leu Ile Val Ser Phe Gly Tyr Ala
 1 5 10 15
 Phe Gly Leu Leu Ile Ile Ala Glu Val Ile Arg Arg Trp Arg Gly Tyr
 20 25 30
 Pro Gln Asp Phe Thr Arg Lys Phe Val His Ile Gly Ala Gly Met Trp
 35 40 45

Val Phe Gly Val Leu Ala Leu Phe Glu Asn Trp Thr Ile Gly Ile Ile
50 55 60

Pro Phe Ala Thr Phe Ile Val Leu Asn Phe Ile Phe Tyr Arg Phe Arg
65 70 75 80

Leu Leu Ala Ala Ile Asp Ala Pro Asp Ser Thr Pro Gly Thr Val Tyr
85 90 95

Phe Ala Leu Ser Ile Thr Ile Leu Phe Leu Ile Phe Trp Arg Thr Asn
100 105 110

Ser Pro Asp Asp Arg Gly Tyr Ile Ala Ala Ala Gly Thr Met Ala Met
115 120 125

Thr Trp Gly Asp Ala Leu Ala Ala Ile Val Gly Lys Arg Trp Gly Arg
130 135 140

His Tyr Tyr Gln Ile Gly Gln Gly Arg Arg Ser Phe Glu Gly Ser Ala
145 150 155 160

Ala Met Phe Ile Ala Ser Thr Val Ala Ile Leu Leu Thr Leu Leu Phe
165 170 175

Thr Pro Gly Ser Ala Leu Ser Pro Gln Ser Ser Pro Ile Asp Val Gly
180 185 190

Ala Ala Leu Ile Thr Ser Ile Val Ala Gly Leu Val Ala Thr Ile Ala
195 200 205

Glu Gly Val Ser Pro His Gly Thr Asp Asn Ile Ser Val Pro Leu Leu
210 215 220

Ala Gly Ala Val Ile Ala Val Met Leu Gly Val Val
225 230 235

<210> 24

<211> 209

<212> PRT

<213> Nostoc punctiforme

<400> 24

Met Leu Leu Ile Leu Val Ile Ala Trp Val Val Asn Arg Phe Ala Asp
1 5 10 15

Glu Pro Glu Ile Val Arg Lys Ile Val His Ile Gly Thr Gly Asn Val
20 25 30

Ile Leu Leu Ala Trp Trp Leu Asp Ile Pro Ala Ser Val Gly Ile Thr
35 40 45

Ala Ser Ile Leu Ala Ser Ala Ile Thr Leu Leu Ser Tyr Arg Leu Pro
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55

60

Ile Leu Pro Gly Ile Asn Ser Val Gly Arg Gln Ser Phe Gly Thr Phe
65 70 75 80

Phe Tyr Ser Val Ser Phe Gly Ile Leu Val Ala Ser Phe Trp Tyr Leu
85 90 95

Gln Gln Pro Gln Tyr Ala Ala Leu Gly Ile Leu Ile Met Thr Trp Gly
100 105 110

Asp Gly Leu Ala Ala Leu Ile Gly Gln Arg Phe Gly Thr His Lys Tyr
115 120 125

Lys Val Phe Gly Thr Gln Lys Ser Trp Glu Gly Ser Leu Thr Met Met
130 135 140

Phe Val Ser Tyr Phe Ile Ser Ile Leu Ile Leu Val Gly Thr Gln Gly
145 150 155 160

Asn Ser Trp Gln Thr Trp Val Ile Ser Leu Ala Val Ala Phe Ile Ala
165 170 175

Thr Val Leu Glu Ala Phe Ser Phe Leu Gly Ile Asp Asn Leu Thr Val
180 185 190

Pro Leu Gly Ser Ala Ala Leu Ala Phe Phe Leu Ser Gln Leu Val Tyr
195 200 205

Phe

<210> 25

<211> 239

<212> PRT

<213> Nostoc punctiforme

<400> 25

Met Thr Asn Asp Phe Ile Gly Leu Ala Ile Ser Tyr Ile Tyr Ala Ile
1 5 10 15

Ser Leu Leu Val Ile Gly Glu Gly Leu Arg Arg Leu Phe Gly Val Lys
20 25 30

Pro Asp Leu Thr Arg Lys Ala Ile His Ile Gly Ala Gly Met Trp Val
35 40 45

Phe Gly Val Leu Leu Leu Phe Asn Arg Trp Glu Ile Gly Ile Ile Pro
50 55 60

Phe Ala Thr Phe Ile Gly Leu Asn Tyr Leu Phe Tyr Arg Tyr Arg Phe
65 70 75 80

Ile Gly Ala Met Asp Thr Gln Asp Ser Ser Pro Gly Thr Val Tyr Phe
85 90 95

Ala Ile Ser Val Thr Leu Leu Phe Gly Leu Leu Trp Arg Pro Asp Gly
100 105 110

Pro Val Asp Ser Val Ala Ile Ala Val Ala Gly Ile Met Ala Met Thr
115 120 125

Trp Gly Asp Ala Leu Ala Ala Leu Ile Gly Arg Arg Phe Gly Gln His
130 135 140

Lys Tyr Gln Val Gly Asn Ser Val Arg Ser Trp Glu Gly Ser Ala Ala
145 150 155 160

Met Phe Val Ala Ser Thr Val Val Ile Phe Leu Val Leu Leu Leu Leu
165 170 175

Pro Gly Ser Ser Leu Ser Pro Leu Gly Thr Pro Leu Ser Phe Gly Leu
180 185 190

Ala Leu Leu Thr Ala Val Val Ala Ala Thr Phe Ala Thr Leu Ala Glu
195 200 205

Ala Val Ser Pro His Gly Thr Asp Asn Leu Ser Val Pro Leu Val Thr
210 215 220

Ala Gly Val Val Trp Val Ile Lys Gln Asn Leu His Leu Phe Phe
225 230 235

<210> 26
<211> 235
<212> PRT
<213> Nostoc sp.-pcc 7120

<400> 26

Met Leu Asn Leu Val Ser Glu Leu Ile Ser Thr Pro Pro Leu Trp Leu
1 5 10 15

Gln Ile Thr Ile Val Ala Ala Trp Val Phe Phe Ile Leu Ala Ile Ala
20 25 30

Gly Leu Val Asn Arg Phe Ala Thr Ser Asp Ser Glu Ile Val Arg Lys
35 40 45

Ile Val His Ile Gly Ala Gly His Val Ile Leu Leu Ala Trp Trp Leu
50 55 60

Asp Ile Pro Ala Ser Val Gly Ile Gly Ala Ser Val Val Ala Ser Ile
65 70 75 80

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Val Thr Leu Leu Ser Tyr Ile Phe Pro Leu Leu Pro Gly Ile Asn Ser
85 90 95

Val Gly Arg Gln Ser Leu Gly Thr Phe Phe Tyr Ala Val Ser Val Gly
100 105 110

Ile Leu Val Ala Trp Phe Trp His Ile Gln Gln Pro Gln Tyr Ala Ala
115 120 125

Ile Gly Met Met Val Met Ala Trp Gly Asp Gly Leu Ala Ala Leu Val
130 135 140

Gly Gln Arg Phe Gly Lys His Lys Tyr Lys Leu Leu Gly Ala Gln Lys
145 150 155 160

Ser Trp Glu Gly Ser Leu Thr Met Ala Leu Ala Ser Tyr Leu Val Cys
165 170 175

Ser Leu Ile Leu Leu Gly Val Leu Gly Asn Val Trp Gln Thr Trp Leu
180 185 190

Val Ser Leu Ala Val Ala Phe Val Ala Thr Ser Leu Glu Ala Phe Ser
195 200 205

Leu Leu Gly Val Asp Asn Leu Thr Val Pro Leu Gly Ser Ala Ala Ile
210 215 220

Ala Phe Ala Leu Ile Gln Phe Trp Pro Leu His
225 230 235

<210> 27
<211> 201
<212> PRT
<213> Prochlorococcus marinus-MIT9313

<400> 27

Met Leu Ser Ala Ala Val Val Cys Arg Val Arg Trp Pro Asn Gln Arg
1 5 10 15

Glu Leu Ser Arg Lys Ile Val His Ile Gly Thr Gly Pro Val Ile Pro
20 25 30

Leu Ala Trp Trp Leu Gly Ile Pro Ser Asp Trp Ala Ile Pro Met Ala
35 40 45

Ile Leu Ile Thr Ile Gly Ile Leu Ile Asn His Arg Trp Arg Leu Leu
50 55 60

Pro Ala Ile Glu Asp Val Asn Arg His Ser Tyr Gly Thr Val Ala Tyr
65 70 75 80

Ren-01-125.ST25.txt

Ala Leu Thr Ile Thr Leu Leu Leu Ile Phe Phe Trp Pro Glu Asn Ala
85 90 95

Ala Ala Val Cys Ser Gly Val Leu Val Met Ala Phe Gly Asp Gly Leu
100 105 110

Ala Gly Leu Ile Gly Arg Lys Val Arg Ser Pro Asn Trp Leu Ile Trp
115 120 125

Gly Gln Arg Lys Ser Ile Ala Gly Thr Leu Thr Met Ala Val Ile Thr
130 135 140

Leu Ile Ile Leu Phe Thr Leu Ser Leu Leu Ile Asp Ala Ser Phe His
145 150 155 160

Pro Leu Arg Ile Phe Ala Val Thr Gly Leu Ala Val Gly Leu Glu Gln
165 170 175

Leu Ser Arg Trp Gly Ile Asp Asn Leu Thr Val Pro Ile Gly Val Ala
180 185 190

Val Ala Trp Ser Trp Met Thr Ala Ile
195 200

<210> 28
<211> 217
<212> PRT
<213> Prochlorococcus marinus-CCMP-1375

<400> 28

Met Ile Asn Ala Tyr Ser Phe Ile Leu Ile Ser Gly Trp Leu Ile Ile
1 5 10 15

Val Leu Ser Thr Ser Tyr Phe Cys Asn Lys Leu Phe Pro Glu Glu Lys
20 25 30

Glu Leu Ser Arg Lys Ile Val His Met Gly Ser Gly Pro Ile Ile Pro
35 40 45

Leu Ala Tyr Trp Leu Asn Ile Ser Ala Gln Ile Ala Ile Pro Ile Ala
50 55 60

Ser Val Ile Thr Leu Ala Leu Leu Ile Asn Tyr Arg Phe Lys Leu Leu
65 70 75 80

Thr Ser Ile Glu Asn Ile Glu Arg Lys Ser Phe Gly Thr Ile Ala Tyr
85 90 95

Gly Ile Ser Ile Thr Leu Leu Leu Ile Leu Phe Trp Thr Asp Asn Pro
100 105 110

Ser Ala Val Ile Ser Gly Val Leu Val Met Ala Phe Gly Asp Gly Leu
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Ala Gly Phe Ile Gly Arg Lys Val Lys Ser Pro Gln Trp Ile Leu Phe
130 135 140

Gly Gln Arg Lys Ser Leu Ile Gly Thr Leu Thr Met Gly Phe Val Ser
145 150 155 160

Ala Leu Ile Leu Thr Ile Val Asn Gln Ser Thr Ala Met Gln Leu Gly
165 170 175

Pro Ile Ala Ile Leu Ser Ile Thr Ser Ile Ala Val Ala Leu Glu Gln
180 185 190

Val Ser Thr Leu Gly Ile Asp Asn Ile Thr Val Pro Ile Gly Val Ala
195 200 205

Leu Ser Trp Gln Ile Met Ser Phe Arg
210 215

<210> 29
<211> 204
<212> PRT
<213> Rickettsia conorii

<400> 29

Met Glu Ile Lys Asp Phe Asp Phe Glu Lys Lys Arg Lys Ile Phe His
1 5 10 15

Leu Ser Ala Ile Ile Phe Pro Leu Leu Tyr Leu Phe Ile Pro Arg Thr
20 25 30

Ala Met Thr Leu Leu Leu Phe Ile Ile Thr Ala Ile Thr Leu Tyr Leu
35 40 45

Asp Val Ser Arg His Asn Asn Ala Thr Ile Ser Glu Phe Val Thr Arg
50 55 60

Phe Phe Ser Lys Val Ile Arg Leu Glu Glu Asn Asn Gly Ser Phe Ala
65 70 75 80

Leu Ser Gly Val Ser Phe Met Met Ile Gly Phe Phe Leu Thr Ala Leu
85 90 95

Leu Phe Pro Lys Asn Leu Val Ile Cys Ser Trp Leu Ile Leu Ile Ile
100 105 110

Ser Asp Cys Leu Ala Ala Leu Val Gly Val Lys Ile Gly Asn Ser Leu
115 120 125

Gly Asn Gly Lys Ser Ile Ala Gly Ser Ile Thr Phe Leu Ala Ser Ala
130 135 140

Ile Phe Ile Ser Ile Leu Val Tyr Phe Tyr Leu Gly Tyr Asn Thr Ser
145 150 155 160

Phe Ile Ile Ile Ile Ile Ser Cys Ile Gly Ala Thr Val Ala Glu Phe
165 170 175

Tyr Ser Lys Asp Leu Arg Ile Asn Asp Asn Leu Ser Ile Pro Leu Ser
180 185 190

Tyr Cys Leu Ser Thr Ala Ile Leu Ser Tyr Ile Leu
195 200

<210> 30
<211> 204
<212> PRT
<213> Rickettsia prowazekii
<400> 30

Met Lys Thr Glu Asp Phe Asp Phe Glu Lys Lys Arg Lys Ile Phe His
1 5 10 15

Ile Ser Ala Ile Ile Phe Pro Met Phe Tyr Leu Phe Val Pro Arg Ile
20 25 30

Ala Ile Ala Leu Leu Leu Phe Ile Ile Thr Ser Ile Thr Leu Tyr Leu
35 40 45

Asp Val Ile Arg His Asn Asn Ala Lys Ile Arg Lys Phe Val Thr Arg
50 55 60

Phe Phe Ser Lys Ile Ile Arg Leu Lys Glu Asn Asn Gly Thr Phe Ala
65 70 75 80

Leu Ser Gly Ile Ser Phe Met Met Leu Gly Phe Phe Leu Thr Ser Ile
85 90 95

Leu Phe Pro Lys Asn Leu Val Ile Cys Ser Trp Leu Ile Leu Ile Ile
100 105 110

Ser Asp Cys Leu Ala Ala Leu Val Gly Ile Lys Ile Gly Ser Ser Leu
115 120 125

Ser Asn Gly Lys Ser Ile Ala Gly Ser Phe Thr Phe Phe Val Ser Ala
130 135 140

Leu Phe Ile Ser Ile Leu Val Tyr Phe Tyr Leu Gly Tyr Asn Thr Ser
145 150 155 160

Phe Val Ile Ile Ile Ile Ser Cys Ile Gly Ala Thr Ala Val Glu Phe
165 170 175

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Tyr Ser Lys Tyr Leu Arg Ile Asn Asp Asn Leu Ser Ile Pro Leu Ser
180 185 190

Tyr Cys Leu Ser Thr Thr Ile Phe Pro Tyr Ile Leu
195 200

<210> 31
<211> 204
<212> PRT
<213> Rickettsia sibirica

<400> 31

Met Glu Ile Lys Asp Phe Asp Phe Glu Lys Lys Arg Lys Ile Phe His
1 5 10 15

Leu Ser Ala Ile Ile Phe Pro Leu Leu Tyr Leu Phe Ile Pro Arg Thr
20 25 30

Ala Ile Thr Leu Leu Leu Phe Ile Ile Thr Ala Ile Thr Leu Tyr Leu
35 40 45

Asp Val Ser Arg His Asn Asn Ala Lys Ile Ser Glu Phe Val Thr Arg
50 55 60

Phe Phe Ser Lys Val Ile Arg Leu Glu Glu Asn Asn Gly Ser Phe Ala
65 70 75 80

Leu Ser Gly Val Ser Phe Met Met Ile Gly Phe Phe Leu Thr Ala Leu
85 90 95

Leu Phe Pro Lys Asn Leu Val Ile Cys Ser Trp Leu Ile Leu Ile Ile
100 105 110

Ser Asp Cys Leu Ala Ala Leu Val Gly Val Lys Ile Gly Asn Ser Leu
115 120 125

Gly Asn Gly Lys Ser Ile Ala Gly Ser Ile Thr Phe Leu Ala Ser Ala
130 135 140

Ile Phe Ile Ser Ile Leu Val Tyr Phe Tyr Leu Gly Tyr Asn Thr Ser
145 150 155 160

Phe Ile Ile Ile Ile Ile Ser Cys Ile Gly Ala Thr Val Ala Glu Phe
165 170 175

Tyr Ser Lys Asp Leu Arg Ile Asn Asp Asn Leu Ser Ile Pro Leu Ser
180 185 190

Tyr Cys Leu Ser Thr Ala Ile Leu Ser Tyr Ile Leu
195 200

<210> 32
 <211> 216
 <212> PRT
 <213> Synechococcus sp.-WH-8102

<400> 32

Met Val His Leu Ile Gly Pro Ile Ala Ile Ser Leu Trp Leu Gly Ile
 1 5 10 15

Val Val Leu Ile Ala Val Leu Thr Arg Gln Arg Trp Pro Asp Gln Gln
 20 25 30

Glu Leu Ser Arg Lys Ile Ile His Ile Gly Thr Gly Ala Val Val Pro
 35 40 45

Leu Ala Trp Phe Phe Ala Ile Pro Ala Trp Ile Ala Val Pro Phe Ala
 50 55 60

Val Leu Val Thr Leu Ala Thr Ala Ile Asn His Arg Trp Arg Ile Val
 65 70 75 80

Pro Ala Val Glu Asp Val Asn Arg Asn Ser Tyr Gly Thr Val Ala Tyr
 85 90 95

Gly Leu Ala Ile Thr Met Leu Leu Ile Leu Cys Trp Pro Ala Arg Ala
 100 105 110

Asp Ala Val Cys Ala Gly Val Leu Val Met Ala Leu Gly Asp Gly Leu
 115 120 125

Ala Gly Leu Ile Gly Arg Ser Val Asn Ser Ala Arg Trp Thr Val Leu
 130 135 140

Gly Gln Thr Lys Ser Val Ala Gly Thr Leu Thr Met Ala Leu Val Ser
 145 150 155 160

Thr Leu Val Leu Val Gly Leu Met Leu Val Ser Gly Asn Ala Ile Gly
 165 170 175

Trp Arg Val Ala Leu Gly Ile Ser Thr Met Ala Thr Ala Leu Glu Gln
 180 185 190

Val Ser Pro Ala Gly Val Asp Asn Leu Ser Val Pro Leu Leu Val Gly
 195 200 205

Leu Thr Trp Val Leu Leu Ile Ser
 210 215

<210> 33
 <211> 214
 <212> PRT
 <213> Thermosynechococcus elongatus BP-1

<400> 33

Met Phe Trp Ala Gly Ile Trp Val Thr Gly Trp Leu Gly Leu Val Leu
 1 5 10 15
 Leu Ile Ala Glu Leu Ile His Ala Trp Phe Pro Asn Ala Lys Glu Trp
 20 25 30
 Ser Arg Lys Val Val His Ile Gly Ala Gly Gln Val Ile Leu Ile Ala
 35 40 45
 Tyr Ala Leu Gly Val Pro Thr Arg Trp Gly Ile Ile Ala Ala Ala Ile
 50 55 60
 Ala Gly Met Val Thr Leu Leu Ser Tyr Arg Val Ser Ile Phe Pro Ser
 65 70 75 80
 Ile Ser Gly Val Gly Arg Gln Ser Trp Gly Thr Phe Phe Tyr Ala Val
 85 90 95
 Ser Ile Gly Ile Leu Met Ala Leu Phe Trp Lys Thr Leu Pro Glu Leu
 100 105 110
 Ala Val Leu Gly Ile Leu Val Met Ala Trp Gly Asp Gly Leu Ala Ala
 115 120 125
 Leu Val Gly Ile His Trp Gly Arg His Pro Leu Pro Gly Thr Ser Lys
 130 135 140
 Ser Trp Glu Gly Thr Leu Thr Met Phe Trp Val Ser Thr Leu Val Ala
 145 150 155 160
 Ala Leu Ser Leu Thr Pro Ile Ala Ala Leu Glu Ser Leu Trp Ile Ala
 165 170 175
 Pro Phe Val Gly Val Gly Ala Thr Leu Leu Glu Leu Ile Ala Trp Arg
 180 185 190
 Gly Met Asp Asn Leu Thr Val Pro Ile Gly Ser Ala Leu Leu Ala Tyr
 195 200 205
 Gly Leu Leu Asn Leu Ser
 210

<210> 34

<211> 244

<212> PRT

<213> Trichodesmium erythraeum-IMS101

<400> 34

Met Tyr Ile Leu Leu Leu Leu Asn Ala Ile Leu Phe Ser Phe Leu Ile
 1 5 10 15

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Val Ser Ile Ile Ser Thr Phe Pro Asn Ile Trp Leu Gln Val Phe Leu
20 25 30

Val Gly Gly Trp Leu Gly Ile Ile Leu Ile Phe Ala Glu Ala Leu Asn
35 40 45

Arg Phe Ala Lys Val Asp Pro Glu Ile Ser Arg Lys Val Val His Ile
50 55 60

Gly Thr Gly Asn Val Ile Leu Phe Ala Trp Trp Leu Glu Ile Pro Pro
65 70 75 80

Trp Ile Gly Ile Thr Ala Gly Ile Ile Ser Ala Ala Ile Ala Leu Ile
85 90 95

Ser Tyr Arg Leu Pro Ile Leu Pro Ser Val Asn Ser Val Gly Arg Lys
100 105 110

Ser Leu Gly Thr Phe Phe Tyr Ala Val Ser Ile Gly Ile Leu Ile Gly
115 120 125

Trp Phe Trp Ser Ile Gln Gln Pro Gln Tyr Ala Ala Ile Gly Ile Leu
130 135 140

Thr Met Ala Trp Gly Asp Gly Phe Ala Ala Ile Ile Gly Gln Asn Phe
145 150 155 160

Gly Lys His Pro Tyr Gln Val Trp Gly Met Asn Lys Ser Trp Glu Gly
165 170 175

Ser Leu Gly Met Cys Leu Val Ser Tyr Thr Val Cys Ser Leu Ile Leu
180 185 190

Leu Ala Val Gln Gly Asn Ile Trp Gln Thr Trp Ile Val Ala Ile Pro
195 200 205

Val Ala Leu Ala Ala Thr Ala Leu Glu Thr Leu Ser Lys Val Gly Leu
210 215 220

Asp Asn Leu Thr Val Pro Leu Gly Ser Ala Ala Leu Cys Phe Phe Leu
225 230 235 240

Asn Gln Phe Phe

<210> 35
<211> 519
<212> PRT
<213> Saccharomyces cerevisiae
<400> 35

Met Val Ala Ile Ile Pro His Ala Ser Phe Thr Thr Ile Lys Leu Thr
 1 5 10 15
 Gln Lys Thr Glu Gly Ser Gln Met Pro Thr Glu Glu Ile Cys Lys Ile
 20 25 30
 Asn Met Arg Thr Arg Lys Phe Asp Val Gly Gly Asn Ser Arg Asp Phe
 35 40 45
 Glu Cys Phe Tyr Ser Asn Phe Val Gln Thr Val Ile Leu Leu Gly Thr
 50 55 60
 Phe Phe Tyr Cys Val Glu Arg Leu Gln Pro Trp Ser Ile Val Thr Ala
 65 70 75 80
 Asp Ile Ser Tyr Lys Gln Ile Phe Val Asn Val Phe Val Val Cys Leu
 85 90 95
 Ile Met Val Gly Leu Ile Phe Thr Lys Tyr Trp Gln His Gly Tyr Lys
 100 105 110
 Ser Leu Pro Lys Phe Asp Thr Ile Tyr Ser Leu Tyr Leu Pro Phe Met
 115 120 125
 Val Ser Leu Leu Phe Asp Thr Ser Ser Thr Val Ile Asn Thr Ile Leu
 130 135 140
 Ile Leu Ser Val Leu Asn Ser Tyr Arg Trp Arg Thr Gln Leu Val Val
 145 150 155 160
 Ile Ile Leu Gln Leu Cys Leu Ile Phe Phe Asn Phe Glu Ala Gly Asp
 165 170 175
 Arg Leu Lys Asn Ile Ile Ser Ile Val Ile Asn Ser Leu Leu Ser Leu
 180 185 190
 Ile Leu Lys Tyr Ile Gly Gln Leu Lys Ser Leu Asp Asn Ile Asp Ser
 195 200 205
 Asn Leu Phe Ser Ile Leu Leu Thr Asn Ile Leu Tyr Val Ser Glu Ala
 210 215 220
 Gly Thr Val His Phe Arg Ile Leu Lys Gly Ile Ile Leu Ala Leu Thr
 225 230 235 240
 Thr Ile Ile Ser Ile Asn Tyr Val Leu Lys Lys Val Met His Phe Lys
 245 250 255
 Pro Phe Met Leu Ser Ile Ser Phe Ala Ile Gly Leu Pro Leu Phe Ala
 260 265 270

Asn Thr Phe Ile His Leu Glu Asp Gly Glu Asn Pro Leu Leu Trp Leu
 275 280 285

Val Lys Tyr Ile Leu Glu Ser Thr Ile Arg Gln Lys Ile Leu Phe Ala
 290 295 300

Trp Ser Ser Ile Leu Ile Leu Ser Ile Pro Ser Ile Leu Ile Glu Lys
 305 310 315 320

Asp Ser Leu Ser Leu Asn Thr Ser Arg Lys Leu Trp His Phe Ile Ile
 325 330 335

Phe Leu Leu Ile Ile Pro Ser Phe Gln Met Asp Ser Asn Phe Val Lys
 340 345 350

Ile Ala Leu Ser Gly Thr Ile Pro Val Phe Leu Ser Ile Glu Tyr Ile
 355 360 365

Arg Phe Gln Asn Leu Pro Pro Leu Gly Ser Ala Ile Glu Leu Gln Leu
 370 375 380

Arg Arg Phe Ala Asp Asp Arg Asp His Ser Gly Pro Leu Ile Ile Ser
 385 390 395 400

Tyr Leu Tyr Leu Leu Phe Gly Ile Ser Thr Pro Leu Leu Met Asn Asn
 405 410 415

Ser Pro Met Gly Leu Ile Gly Leu Gly Ile Gly Asp Ser Leu Ala Ser
 420 425 430

Ile Ile Gly Lys Arg Tyr Gly Arg Ile Arg Trp Lys Gly Thr Gln Lys
 435 440 445

Thr Leu Glu Gly Thr Leu Ala Phe Ile Val Thr Ser Phe Ile Val Cys
 450 455 460

Leu Val Leu Leu Arg Phe Asp Lys Ala Ala Ile Phe Asn His Leu Thr
 465 470 475 480

Thr Leu Gln Leu Leu Thr Leu Cys Thr Leu Ser Gly Val Leu Glu Gly
 485 490 495

Asn Ser Val Leu Asn Asp Asn Ile Leu Ile Pro Ala Phe Met Met Ile
 500 505 510

Cys Glu Lys Leu Ile Thr Leu
 515

<210> 36
 <211> 290
 <212> PRT
 <213> Saccharomyces cerevisiae

<400> 36

Met Gly Thr Glu Asp Ala Ile Ala Leu Pro Asn Ser Thr Leu Glu Pro
 1 5 10 15

Arg Thr Glu Ala Lys Gln Arg Leu Ser Ser Lys Ser His Gln Val Ser
 20 25 30

Ala Lys Val Thr Ile Pro Ala Lys Glu Glu Ile Ser Ser Ser Asp Asp
 35 40 45

Asp Ala His Val Pro Val Thr Glu Ile His Leu Lys Ser His Glu Trp
 50 55 60

Phe Gly Asp Phe Ile Thr Lys His Glu Ile Pro Arg Lys Val Phe His
 65 70 75 80

Ser Ser Ile Gly Phe Ile Thr Leu Tyr Leu Tyr Thr Gln Gly Ile Asn
 85 90 95

Tyr Lys Asn Val Leu Trp Pro Leu Ile Tyr Ala Phe Ile Ile Leu Phe
 100 105 110

Ile Leu Asp Leu Ile Arg Leu Asn Trp Pro Phe Phe Asn Met Leu Tyr
 115 120 125

Cys Arg Thr Val Gly Ala Leu Met Arg Lys Lys Glu Ile His Thr Tyr
 130 135 140

Asn Gly Val Leu Trp Tyr Ile Leu Gly Leu Ile Phe Ser Phe Asn Phe
 145 150 155 160

Phe Ser Lys Asp Val Thr Leu Ile Ser Leu Phe Leu Leu Ser Trp Ser
 165 170 175

Asp Thr Ala Ala Ala Thr Ile Gly Arg Lys Tyr Gly His Leu Thr Pro
 180 185 190

Lys Val Ala Arg Asn Lys Ser Leu Ala Gly Ser Ile Ala Ala Phe Thr
 195 200 205

Val Gly Val Ile Thr Cys Trp Val Phe Tyr Gly Tyr Phe Val Pro Ala
 210 215 220

Tyr Ser Tyr Val Asn Lys Pro Gly Glu Ile Gln Trp Ser Pro Glu Thr
 225 230 235 240

Ser Arg Leu Ser Leu Asn Met Leu Ser Leu Leu Gly Gly Val Val Ala
 245 250 255

Ala Leu Ser Glu Gly Ile Asp Leu Phe Asn Trp Asp Asp Asn Phe Thr
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270

Ile Pro Val Leu Ser Ser Leu Phe Met Asn Ala Val Ile Lys Thr Phe
275 280 285

Lys Lys
290

<210> 37
<211> 288
<212> PRT
<213> Allium porrum

<400> 37

Thr Gly Pro Pro Leu Val Pro Leu Thr Pro His Leu Thr Thr Val Lys
1 5 10 15

Ser Thr Asn Thr Thr Val Thr Thr Arg Pro Ala Asn Phe Pro Thr Arg
20 25 30

Ile His Ile Asp Arg Ser Ala Ala Lys Leu Ser Leu Arg Asn Gln Trp
35 40 45

Ser Leu Thr Ala Ser Ile Leu Pro Val Asn Pro Leu Ala Gln Asp Ala
50 55 60

Cys Ala Ala Val Ile Thr Ala Gly Ala Ala Leu Gly Leu Leu Arg Phe
65 70 75 80

Phe Glu Glu Leu Ala Lys Arg Gln Thr Phe Asp Gln Lys Leu Asn Arg
85 90 95

Lys Leu Val His Ile Leu Val Gly Leu Val Phe Met Leu Phe Trp Pro
100 105 110

Ile Phe Ser Ser Glu Trp Gln Ala Pro Leu Leu Ala Ala Leu Ala Pro
115 120 125

Gly Ile Asn Ile Phe Arg Met Leu Phe Met Gly Leu Gly Ile Ile Lys
130 135 140

Asn Glu Ala Met Val Gln Ser Ile Ser Arg His Gly Asp Tyr Arg Glu
145 150 155 160

Leu Leu Lys Gly Pro Leu Tyr Tyr Ala Cys Thr Ile Thr Leu Ala Thr
165 170 175

Ser Val Phe Trp Arg Thr Ser Pro Val Gly Met Ala Ala Val Cys Asn
180 185 190

Leu Cys Ala Gly Asp Gly Leu Ala Asp Ile Ile Gly Arg Arg Phe Gly
195 200 205

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Lys His Lys Leu Thr Tyr Asn Pro Asp Lys Ser Ile Glu Gly Ser Ala
210 215 220

Ala Met Ala Leu Ala Gly Phe Val Ala Ser Val Leu Tyr Met His Tyr
225 230 235 240

Phe Ala Ile Phe Gly Phe Ile Glu Glu Ser Leu Gly Met Val Val Arg
245 250 255

Phe Phe Leu Leu Ser Phe Ala Ser Ala Val Val Glu Ser Leu Pro Ile
260 265 270

Ser Ser Glu Leu Asp Asp Asn Leu Thr Val Pro Leu Thr Ser Pro Arg
275 280 285

<210> 38
<211> 289
<212> PRT
<213> Brassica napus

<400> 38

Asp Ser Ser Ser Cys Phe Phe Ser Pro Ile Pro Arg Phe Leu Thr Leu
1 5 10 15

Arg Ile Ala Thr Thr Thr Ala Leu Arg Ser Ala Ala Thr Phe Thr Leu
20 25 30

Arg Arg Ser Pro Ser His Arg Ser Leu Thr Pro Ser Leu Ala Val Met
35 40 45

Phe Pro Asp Asn Ser Val Leu Ser Asp Val Cys Ala Ser Gly Ile Thr
50 55 60

Ser Val Val Ala Val Ser Cys Leu Gly Phe Trp Gly Glu Ile Gly Lys
65 70 75 80

Arg Gly Phe Phe Asp Gln Lys Leu Ile Arg Lys Leu Val His Ile Asn
85 90 95

Ile Gly Leu Val Phe Met Leu Cys Trp Pro Leu Phe Ser Ser Gly Arg
100 105 110

Gln Gly Ala Leu Leu Ala Ser Leu Val Pro Gly Leu Asn Ile Val Arg
115 120 125

Met Leu Leu Leu Gly Leu Gly Val Tyr Gln Asp Glu Gly Thr Ile Lys
130 135 140

Ser Met Ser Arg His Gly Asp Arg Arg Glu Leu Leu Lys Gly Pro Leu
145 150 155 160

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Tyr Tyr Ala Leu Ser Ile Thr Ser Ala Cys Phe Phe Tyr Trp Lys Thr
165 170 175
Ser Pro Ile Ala Ile Ala Val Ile Cys Asn Leu Cys Ala Gly Asp Gly
180 185 190
Met Ala Asp Ile Val Gly Arg Arg Leu Gly Thr Glu Lys Leu Pro Tyr
195 200 205
Asn Arg Asn Lys Ser Leu Ala Gly Ser Ile Gly Met Ala Ile Ala Gly
210 215 220
Phe Leu Ala Ser Val Gly Tyr Met Tyr Tyr Phe Ser Ser Phe Gly Tyr
225 230 235 240
Met Glu Ser Thr Gly Trp Asp Met Ile Leu Arg Phe Leu Val Ile Ser
245 250 255
Ile Ala Ser Ala Leu Ile Glu Ser Leu Pro Ile Ser Thr Asp Ile Asp
260 265 270
Asp Asn Leu Thr Ile Pro Leu Thr Ser Ala Leu Val Gly Thr Leu Leu
275 280 285

Phe

<210> 39
<211> 304
<212> PRT
<213> Brassica napus

<400> 39

Met Ala Ala Ala Leu Pro Leu Ser Pro Val Ser His Gln Leu Cys Arg
1 5 10 15
Ile Ser Asn Arg Phe Trp Tyr Asn Ala Met Thr Pro Arg Phe Cys Ser
20 25 30
Pro Val Ser Ser Pro Cys Tyr Ile Gly Val Lys Gly Ile Gly Ser Ser
35 40 45
Ser Gln Leu Arg Ala Arg His Pro Leu Ile Ser Ser Ala Ala Ser Thr
50 55 60
Asp Tyr Leu Leu His Asp Val Gly Ala Thr Val Ala Val Leu Ser Gly
65 70 75 80
Ala Tyr Ala Leu Val Leu Leu Phe Glu Ser Leu Thr Lys Arg Asp Val
85 90 95

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Ile Pro Gln Arg Leu Ser Arg Lys Leu Val His Ile Leu Ser Gly Leu
100 105 110

Leu Phe Ala Leu Ser Trp Pro Ile Phe Ser Ala Ser Thr Glu Ala Arg
115 120 125

Tyr Phe Ala Ala Phe Val Pro Leu Val Asn Gly Leu Arg Leu Val Val
130 135 140

Asn Gly Leu Ser Val Ser Pro Asn Ser Thr Leu Ile Gln Ser Val Thr
145 150 155 160

Arg Glu Gly Arg Pro Glu Glu Leu Leu Lys Gly Pro Leu Phe Tyr Val
165 170 175

Leu Ala Leu Leu Val Ala Ala Val Phe Phe Trp Arg Asp Ser Pro Thr
180 185 190

Gly Met Ile Ser Leu Ala Met Met Cys Gly Gly Asp Gly Ile Ala Asp
195 200 205

Ile Met Gly Arg Lys Tyr Gly Ser Tyr Lys Ile Pro Tyr Asn Pro Arg
210 215 220

Lys Ser Leu Ala Gly Ser Ile Ser Met Phe Ile Phe Gly Phe Phe Ile
225 230 235 240

Ser Ile Gly Leu Leu Tyr Tyr Tyr Ser Ser Leu Gly Tyr Leu His Met
245 250 255

Asn Trp Glu Thr Thr Phe Thr Arg Val Ala Ile Val Ser Leu Val Ala
260 265 270

Thr Leu Val Glu Ser Leu Pro Ile Thr Asp Gln Ile Asp Asp Asn Val
275 280 285

Ser Val Pro Leu Ala Thr Ile Leu Ala Ala Tyr Leu Ser Phe Gly Tyr
290 295 300

<210> 40

<211> 240

<212> PRT

<213> Gossypium hirsutum-LIB3165

<400> 40

Met Leu Tyr Glu Asn Ser Leu Val Ser Asp Leu Phe Ala Ala Val Val
1 5 10 15

Cys Cys Gly Val Ile Phe Ala Phe Leu Leu Leu Trp Gln Val Thr Ala
20 25 30

Lys Cys Gly Val Asp Gln Lys Leu Asn Arg Lys Leu Val His Ile Ser
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Ile Gly Leu Val Phe Met Leu Cys Trp Pro Leu Phe Ser Ala Gly Tyr
50 55 60

Arg Gly Ala Ile Leu Ala Ala Ile Thr Pro Gly Val Asn Ile Ile Arg
65 70 75 80

Met Leu Leu Ile Gly Ser Gly Ile Trp Lys Asp Glu Ala Thr Val Lys
85 90 95

Ser Met Ser Arg Tyr Gly Asn Tyr Arg Glu Leu Leu Lys Gly Pro Leu
100 105 110

Tyr Tyr Ala Ile Thr Val Thr Leu Ala Cys Val Val Tyr Trp Arg Thr
115 120 125

Ser Pro Ile Gly Ile Ala Ala Leu Cys Asn Leu Cys Ala Gly Asp Gly
130 135 140

Leu Ala Asp Val Val Gly Arg Arg Leu Gly Arg Lys Lys Leu Pro Tyr
145 150 155 160

Asn Arg Asn Lys Ser Val Ala Gly Ser Val Ala Met Ala Thr Ala Gly
165 170 175

Phe Leu Ser Ser Val Gly Tyr Met Tyr Tyr Phe Ser Tyr Phe Gly Tyr
180 185 190

Ile Gln Glu Gly Trp Gly Met Ile Leu Arg Phe Leu Val Val Ser Leu
195 200 205

Ala Ser Ala Leu Val Glu Ser Leu Pro Ile Ser Thr Glu Leu Asp Asp
210 215 220

Asn Leu Thr Val Ser Leu Thr Ser Ile Phe Ile Gly Ser Leu Ile Phe
225 230 235 240

<210> 41
<211> 298
<212> PRT
<213> Gossypium hirsutum

<400> 41

Met Ser Leu Ser Leu Ser Phe Thr His Pro Ile Leu Ser Arg His Val
1 5 10 15

Tyr Ser Ala Val Phe Pro Pro Pro Arg Phe Leu Phe Leu Ser Pro Leu
20 25 30

Ile Pro Thr Thr Ser Arg Phe Pro Ile Leu Tyr Arg Ala Pro Gln Arg
35 40 45

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Ala Thr Ala Leu Ser Ala Thr Ala Val Thr Ala Ser Ile Phe Arg Asp
50 55 60

Thr Ala Ala Ser Ala Ser Val Phe Ala Gly Ala Tyr Ala Leu Val Phe
65 70 75 80

Thr Phe Asp Ile Leu Thr Gln Lys Glu Leu Ile Gln Gln Asn Leu Ser
85 90 95

Arg Lys Leu Val His Ile Leu Ser Gly Leu Leu Phe Ala Ile Ser Trp
100 105 110

Pro Ile Phe Ser Asn Ala Asp Glu Ala Arg Tyr Phe Ala Ser Leu Val
115 120 125

Pro Leu Phe Asn Cys Leu Arg Leu Val Ile His Gly Leu Ser Leu Thr
130 135 140

Asp Asp Gln Ser Leu Ile Lys Ser Val Thr Arg Glu Gly Asn Pro Lys
145 150 155 160

Glu Leu Leu Arg Gly Pro Leu Tyr Tyr Val Ala Met Leu Met Leu Cys
165 170 175

Ala Leu Val Phe Trp Arg Glu Ser Pro Val Gly Val Ile Cys Leu Ala
180 185 190

Met Met Cys Gly Gly Asp Gly Val Ala Asp Ile Ile Gly Arg Lys Tyr
195 200 205

Gly Ser Ser Lys Ile Pro Tyr Asn Gln Ser Lys Ser Trp Val Gly Ser
210 215 220

Ile Ser Met Phe Val Ser Gly Phe Ile Ile Ser Ile Gly Met Leu Tyr
225 230 235 240

Tyr Tyr Ser Ala Leu Gly Tyr Leu Gln Leu Asp Trp Gly Tyr Thr Leu
245 250 255

His Arg Val Ala Phe Ile Ser Leu Val Ala Thr Val Val Glu Ser Leu
260 265 270

Pro Ile Ser Met Leu Ile Asp Asp Asn Ile Ser Val Pro Leu Ala Ser
275 280 285

Met Leu Ala Ala Tyr Leu Thr Phe Gly His
290 295

<210> 42
<211> 318

<212> PRT

<213> Glycine max

<400> 42

Met Met Phe Leu Ser Phe Asn Met Ile Ser Gly Gly Asn Thr Leu Gln
 1 5 10 15

Arg Phe Asp Pro Val Ala Cys Val Ser Ser Val Pro Leu Leu Ala
 20 25 30

Pro Thr Thr Arg Pro Thr Phe His Phe Pro Ser Pro Phe Leu Ser Lys
 35 40 45

Pro Lys Pro Thr Tyr Leu Phe Thr Ser Phe Ser Ser Ser Ser Ser
 50 55 60

Ser Ser Ser Phe Phe Ser Ser Thr Thr Pro Pro Arg Ser Thr Met Leu
 65 70 75 80

His His Asp Pro Leu Val Ser Asp Val Tyr Ala Thr Ala Ile Ser Gly
 85 90 95

Val Val Ala Leu Ser Phe Leu Arg Leu Phe Gln Glu Thr Ala Lys Arg
 100 105 110

Asp Leu Phe Asp Gln Lys Leu Asn Arg Lys Leu Val His Ile Ser Ile
 115 120 125

Gly Leu Ile Phe Met Leu Cys Pro Leu Phe Ser Thr Glu Thr Trp Ala
 130 135 140

Ser Phe Phe Ala Ala Leu Ile Pro Gly Ile Asn Ile Phe Arg Met Leu
 145 150 155 160

Val Ile Gly Leu Gly Ile Leu Lys Asp Glu Ala Thr Val Lys Ser Met
 165 170 175

Ser Arg Phe Gly Asp Tyr Arg Glu Leu Leu Lys Gly Pro Leu Tyr Tyr
 180 185 190

Ala Ala Thr Ile Thr Leu Ala Ala Ile Ile Tyr Trp Arg Thr Ser Pro
 195 200 205

Ile Ser Ile Ala Ala Ile Cys Asn Leu Cys Ala Gly Asp Gly Met Ala
 210 215 220

Asp Ile Val Gly Arg Arg Leu Gly Gly Glu Lys Ile Pro Tyr Asn Lys
 225 230 235 240

Asn Lys Ser Phe Ala Gly Ser Ile Ala Met Ala Thr Ala Gly Phe Leu
 245 250 255

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Thr Ser Ile Gly Tyr Met Trp Tyr Phe Ser Ser Phe Gly Phe Ile Glu
260 265 270

Gly Ser Trp Lys Leu Val Leu Gly Phe Leu Leu Val Ser Ile Val Thr
275 280 285

Ala Phe Val Glu Ser Leu Pro Ile Ser Thr Glu Leu Asp Asp Asn Leu
290 295 300

Thr Val Pro Leu Thr Ser Ile Leu Val Gly Ser Ile Ile Leu
305 310 315

<210> 43
<211> 319
<212> PRT
<213> Glycine max

<220>
<221> misc_feature
<222> (158)..(158)
<223> Xaa can be any naturally occurring amino acid

<400> 43

Met Met Phe Leu Ser Phe Asn Met Ile Ser Gly Gly Asn Thr Leu Gln
1 5 10 15

Arg Phe Asp Pro Val Ala Cys Val Ser Ser Val Pro Leu Leu Leu Ala
20 25 30

Pro Thr Thr Arg Pro Thr Phe His Phe Pro Ser Pro Phe Leu Ser Lys
35 40 45

Pro Lys Pro Thr Tyr Leu Phe Thr Ser Phe Ser Ser Ser Ser Ser
50 55 60

Ser Ser Ser Phe Phe Ser Ser Thr Thr Pro Pro Arg Ser Thr Met Leu
65 70 75 80

His His Asp Pro Leu Val Ser Asp Val Tyr Ala Thr Ala Ile Ser Gly
85 90 95

Val Val Ala Leu Ser Phe Leu Arg Leu Phe Gln Glu Thr Ala Lys Arg
100 105 110

Asp Leu Phe Asp Gln Lys Leu Asn Arg Lys Leu Val His Ile Ser Ile
115 120 125

Gly Leu Ile Phe Met Leu Cys Trp Pro Leu Phe Ser Thr Glu Thr Trp
130 135 140

Ala Ser Phe Phe Ala Ala Leu Ile Pro Gly Ile Asn Ile Xaa Arg Met
145 150 155 160

Leu Val Ile Gly Leu Gly Ile Leu Lys Asp Glu Ala Thr Val Lys Ser
165 170 175

Met Ser Arg Phe Gly Asp Tyr Arg Glu Leu Leu Lys Gly Pro Leu Tyr
180 185 190

Tyr Ala Ala Thr Ile Thr Leu Ala Ala Ile Ile Tyr Trp Arg Thr Ser
195 200 205

Pro Ile Ser Ile Ala Ala Ile Cys Asn Leu Cys Ala Gly Asp Gly Met
210 215 220

Ala Asp Ile Val Gly Arg Arg Leu Gly Gly Glu Lys Ile Pro Tyr Asn
225 230 235 240

Lys Asn Lys Ser Phe Ala Gly Ser Ile Ala Met Ala Thr Ala Gly Phe
245 250 255

Leu Thr Ser Ile Gly Tyr Met Trp Tyr Phe Ser Ser Phe Gly Phe Ile
260 265 270

Glu Gly Ser Trp Lys Leu Val Leu Gly Phe Leu Leu Val Ser Ile Val
275 280 285

Thr Ala Phe Val Glu Ser Leu Pro Ile Ser Thr Glu Leu Asp Asp Asn
290 295 300

Leu Thr Val Pro Leu Thr Ser Ile Leu Val Gly Ser Ile Ile Leu
305 310 315

<210> 44
<211> 292
<212> PRT
<213> Glycine max

<220>
<221> misc_feature
<222> (148)..(148)
<223> Xaa can be any naturally occurring amino acid

<400> 44

Met Ala Ala Ala Ala Ala Trp Thr Gly Ala Ala Ser Pro Asn Ser Leu
1 5 10 15

Leu Leu Ser Arg Ser Pro Pro His Ala Ala Ala Leu Ala Pro Ser Pro
20 25 30

Gly Ser Ser Met Arg Arg Arg Leu Leu Gly Val Gly Thr Pro Ala
35 40 45

Val Ala Ala Leu Ala Ala Ala Ala Pro Pro Ala Val Leu Gln Asp Gly
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55

60

Ala Val Thr Val Leu Ile Thr Ala Gly Ala Tyr Ser Leu Val Arg Val
65 70 75 80

Phe Asp Glu Leu Thr Glu Arg Arg Leu Ile Glu Lys Ser Leu Ser Arg
85 90 95

Lys Val Val His Val Leu Ser Gly Val Leu Phe Met Ser Ser Trp Pro
100 105 110

Leu Phe Ser Asn Ser Thr Glu Ala Arg Tyr Phe Ala Ala Val Val Pro
115 120 125

Phe Leu Asn Ser Met Arg Leu Leu Ile Tyr Gly Leu Arg Leu Tyr Thr
130 135 140

Asp Glu Ala Xaa Glu Leu Leu Arg Gly Pro Leu Tyr Tyr Val Leu Val
145 150 155 160

Leu Leu Phe Ser Val Leu Val Phe Trp Arg Glu Ser Pro Ile Gly Ile
165 170 175

Val Ser Leu Ser Met Met Ser Gly Gly Asp Gly Phe Ala Asp Ile Val
180 185 190

Gly Arg Arg Tyr Gly Ser Ala Lys Leu Pro Phe Asn Arg Lys Lys Ser
195 200 205

Trp Ala Gly Ser Ile Ser Met Phe Ile Ser Gly Phe Leu Leu Ser Ala
210 215 220

Met Met Met Leu Tyr Phe Ser Ser Leu Gly Tyr Ile Asp Val Ile Trp
225 230 235 240

Glu Glu Ala Leu Gly Lys Leu Ala Leu Val Ala Leu Ala Ala Thr Val
245 250 255

Val Glu Cys Val Pro Val Thr Glu Val Val Asp Asp Asn Ile Ser Val
260 265 270

Pro Leu Ala Thr Met Leu Val Ala Phe Leu Leu Phe Ser Ser Asn Arg
275 280 285

Thr Ile Val Asn
290

<210> 45
<211> 302
<212> PRT
<213> Glycine max

<400> 45

Met Thr Leu Leu Ser Ser His Leu Leu Val Phe Ser Ala Val His His
 1 5 10 15
 Arg Ala Pro Pro Thr Thr Thr Thr Arg Asn Ser Pro Thr Thr Asn His
 20 25 30
 Thr Val Arg Phe Leu Cys Ser Pro Gly Val Pro Pro Ala Val Arg Leu
 35 40 45
 Asp Gln Arg Leu Pro Arg Phe Val Val Pro Gly Ala Gly Ala Glu Asp
 50 55 60
 Leu Leu Tyr Asn Ala Gly Ala Thr Val Gly Val Leu Gly Gly Gly Tyr
 65 70 75 80
 Ala Leu Val Arg Ala Phe Asp Glu Leu Thr Arg Arg Asn Ile Leu Gln
 85 90 95
 Gln Gly Leu Ser Arg Lys Leu Val His Ile Leu Ser Gly Leu Leu Phe
 100 105 110
 Leu Val Ser Trp Pro Ile Phe Ser Asn Ser Pro Lys Ala Arg Tyr Phe
 115 120 125
 Ala Ala Phe Val Pro Leu Val Asn Cys Leu Arg Leu Leu Val Asn Gly
 130 135 140
 Leu Ser Leu Ala Ser Asp Glu Gly Leu Ile Lys Ser Val Thr Arg Glu
 145 150 155 160
 Gly Asp Pro Leu Glu Leu Leu Arg Gly Pro Leu Tyr Tyr Val Leu Ile
 165 170 175
 Leu Ile Leu Ser Ala Leu Val Phe Trp Arg Glu Ser Pro Ile Gly Val
 180 185 190
 Ile Ser Leu Ala Met Met Cys Ala Gly Asp Gly Ile Ala Asp Ile Ile
 195 200 205
 Gly Arg Arg Tyr Gly Ser Met Lys Ile Pro Tyr Asn Glu His Lys Ser
 210 215 220
 Leu Ala Gly Ser Met Ser Met Leu Val Phe Gly Phe Leu Val Ser Ile
 225 230 235 240
 Gly Met Leu Tyr Tyr Tyr Ser Val Leu Gly His Val Gln Leu Asp Trp
 245 250 255
 Ala Ser Thr Leu Pro Arg Val Ala Phe Ile Ser Phe Val Ala Thr Leu
 260 265 270

Val Glu Ser Leu Pro Ile Thr Lys Val Val Asp Asp Asn Ile Ser Val
 275 280 285

Pro Leu Ala Thr Met Ala Val Ala Phe Phe Thr Phe His His
 290 295 300

<210> 46
 <211> 314
 <212> PRT
 <213> Oryza sativa

<400> 46

Met Ala Ala Ala Ala Arg Pro Val Asp Val Val Arg His Phe Pro Cys
 1 5 10 15

Ser Ser Ser Val Ala Ala Ser Ser Ser Leu Leu Leu Ser Arg Ser Lys
 20 25 30

Ser Arg Leu Ala Ser Pro Ala Ala Ala Ala Ser Ser Met Arg Arg
 35 40 45

Arg Leu Val Leu Gly Val Gly Ala Ala Ala Ala Pro Ala Val Ala Ala
 50 55 60

Leu Ala Ala Ser Ala Thr Pro Ala Ala Leu Arg Asp Cys Ala Ala Thr
 65 70 75 80

Leu Leu Ile Thr Ala Gly Ala Tyr Ser Leu Val Arg Ala Phe Asp Gly
 85 90 95

Leu Thr Ala Arg Arg Leu Ile Glu Gln Asn Leu Ser Arg Lys Ile Val
 100 105 110

His Val Leu Ser Gly Val Leu Phe Met Ser Ser Trp Pro Leu Phe Ser
 115 120 125

Asn Ser Thr Glu Ala Arg Phe Phe Ala Ala Ile Val Pro Leu Leu Asn
 130 135 140

Cys Ile Arg Leu Leu Thr Tyr Gly Leu Arg Leu Ser Thr Asp Glu Ala
 145 150 155 160

Leu Val Lys Ser Val Thr Arg Glu Gly Lys Pro Glu Glu Leu Leu Arg
 165 170 175

Gly Pro Leu Tyr Tyr Val Ile Val Leu Leu Val Ser Val Leu Val Phe
 180 185 190

Trp Arg Gln Ser Pro Ile Gly Ile Val Ser Leu Ser Met Met Ser Gly
 195 200 205

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Gly Asp Gly Phe Ala Asp Ile Val Gly Arg Arg Tyr Gly Ser Ala Lys
210 215 220

Leu Pro Phe Asn Glu Asn Lys Ser Trp Ile Gly Ser Ile Ser Met Phe
225 230 235 240

Ile Ser Gly Phe Leu Leu Ser Ala Leu Met Leu Phe Tyr Phe Ser Cys
245 250 255

Leu Gly Tyr Phe Thr Val Cys Trp Asp Leu Ala Leu Gly Lys Leu Ala
260 265 270

Leu Val Ala Leu Ala Ala Thr Val Val Glu Cys Ile Pro Val Asn Asp
275 280 285

Val Val Asp Asp Asn Ile Ser Val Pro Leu Ala Thr Met Leu Ala Ala
290 295 300

Tyr Leu Leu Phe Gly Tyr Ser Ser Cys Cys
305 310

<210> 47
<211> 269
<212> PRT
<213> Oryza sativa

<400> 47

Met Arg Arg Arg Leu Val Leu Gly Val Gly Ala Ala Ala Ala Pro Ala
1 5 10 15

Val Ala Ala Leu Ala Ala Ser Ala Thr Pro Ala Ala Leu Arg Asp Cys
20 25 30

Ala Ala Thr Leu Leu Ile Thr Ala Gly Ala Tyr Ser Leu Val Arg Ala
35 40 45

Phe Asp Gly Leu Thr Ala Arg Arg Leu Ile Glu Gln Asn Leu Ser Arg
50 55 60

Lys Ile Val His Val Leu Ser Gly Val Leu Phe Met Ser Ser Trp Pro
65 70 75 80

Leu Phe Ser Asn Ser Thr Glu Ala Arg Phe Phe Ala Ala Ile Val Pro
85 90 95

Leu Leu Asn Cys Ile Arg Leu Leu Thr Tyr Gly Leu Arg Leu Ser Thr
100 105 110

Asp Glu Ala Leu Val Lys Ser Val Thr Arg Glu Gly Lys Pro Glu Glu
115 120 125

Leu Leu Arg Gly Pro Leu Tyr Tyr Val Ile Val Leu Leu Val Ser Val
 130 135 140

Leu Val Phe Trp Arg Gln Ser Pro Ile Gly Ile Val Ser Leu Ser Met
 145 150 155 160

Met Ser Gly Gly Asp Gly Phe Ala Asp Ile Val Gly Arg Arg Tyr Gly
 165 170 175

Ser Ala Lys Leu Pro Phe Asn Glu Asn Lys Ser Trp Ile Gly Ser Ile
 180 185 190

Ser Met Phe Ile Ser Gly Phe Leu Leu Ser Ala Leu Met Leu Phe Tyr
 195 200 205

Phe Ser Cys Leu Gly Tyr Phe Thr Val Cys Trp Asp Leu Ala Leu Gly
 210 215 220

Lys Leu Ala Leu Val Ala Leu Ala Ala Thr Val Val Glu Cys Ile Pro
 225 230 235 240

Val Asn Asp Val Val Asp Asp Asn Ile Ser Val Pro Leu Ala Thr Met
 245 250 255

Leu Ala Ala Tyr Leu Leu Phe Gly Tyr Ser Ser Cys Cys
 260 265

<210> 48
 <211> 803
 <212> PRT
 <213> Oryza sativa

<400> 48

Met Ala Gly Gly Gly Gly Lys Ser Val Ala Ala Ala Leu Ala Met Ala
 1 5 10 15

Cys Phe Leu Leu Ile Leu Ala Ala Phe Ala Pro Pro Ala Ala Ala Ala
 20 25 30

Pro Pro Asp Ile Met Ser Ile Ile Arg Tyr Asn Ala Glu His Gly Val
 35 40 45

Arg Gly Leu Glu Arg Thr Glu Ala Glu Ala Arg Ala Ala Tyr Asp Leu
 50 55 60

Trp Leu Ala Arg His Arg Arg Gly Gly Gly Gly Gly Ser Arg Asn Gly
 65 70 75 80

Phe Ile Gly Glu His Glu Arg Arg Phe Arg Val Phe Trp Asp Asn Leu
 85 90 95

Lys Phe Val Asp Ala His Asn Ala Arg Ala Asp Glu Arg Gly Gly Phe
 Page 44

Arg Leu Gly Met Asn Arg Phe Ala Asp Leu Thr Asn Gly Glu Phe Arg
115 120 125

Ala Thr Tyr Leu Gly Thr Thr Pro Ala Gly Arg Gly Arg Arg Val Gly
130 135 140

Glu Ala Tyr Arg His Asp Gly Val Glu Ala Leu Pro Asp Ser Val Asp
145 150 155 160

Trp Arg Asp Lys Gly Ala Val Val Ala Pro Val Lys Asn Gln Gly Gln
165 170 175

Cys Gly Ser Cys Trp Ala Phe Ser Ala Val Ala Ala Val Glu Gly Ile
180 185 190

Asn Lys Ile Val Thr Gly Glu Leu Val Ser Leu Ser Glu Gln Glu Leu
195 200 205

Val Glu Cys Ala Arg Asn Gly Gln Asn Ser Gly Cys Asn Gly Gly Ile
210 215 220

Met Asp Asp Ala Phe Ala Phe Ile Ala Arg Asn Gly Gly Leu Asp Thr
225 230 235 240

Glu Glu Asp Tyr Pro Tyr Thr Ala Met Asp Gly Lys Cys Asn Leu Ala
245 250 255

Lys Arg Ser Arg Lys Val Val Ser Ile Asp Gly Phe Glu Asp Val Pro
260 265 270

Glu Asn Asp Glu Leu Ser Leu Gln Lys Ala Val Ala His Gln Pro Val
275 280 285

Ser Val Ala Ile Asp Ala Gly Gly Arg Glu Phe Gln Leu Tyr Asp Ser
290 295 300

Gly Val Phe Thr Gly Arg Cys Gly Thr Asn Leu Asp His Gly Val Val
305 310 315 320

Ala Val Gly Tyr Gly Thr Asp Ala Ala Thr Gly Ala Ala Tyr Trp Thr
325 330 335

Val Arg Asn Ser Trp Gly Pro Asp Trp Gly Glu Asn Gly Tyr Ile Arg
340 345 350

Met Glu Arg Asn Val Thr Ala Arg Thr Gly Lys Cys Gly Ile Ala Met
355 360 365

Met Ala Ser Tyr Pro Ile Lys Lys Gly Pro Asn Pro Lys Pro Ser Pro

370

375

380

Pro Ser Pro Ala Pro Ser Pro Pro Gln Gln Cys Asp Arg Tyr Ser Lys
385 390 395 400

Cys Pro Ala Gly Thr Thr Cys Cys Cys Asn Tyr Gly Ile Arg Asn His
405 410 415

Cys Ile Val Trp Gly Cys Cys Pro Val Glu Gly Ala Thr Cys Cys Lys
420 425 430

Asp His Ser Thr Cys Cys Pro Lys Glu Tyr Pro Val Cys Asn Ala Lys
435 440 445

Ala Arg Thr Cys Ser Lys Ser Lys Asn Ser Pro Tyr Asn Val Glu Ala
450 455 460

Leu Ile Arg Thr Pro Ala Ala Met Ala Arg Ser Val Pro Glu Gln Pro
465 470 475 480

Asp Ser Ile Ser Phe Ser Val Tyr Arg Met Ala Ala Ala Ala Arg Pro
485 490 495

Val Asp Val Val Arg His Phe Pro Cys Ser Ser Ser Val Ala Ala Ser
500 505 510

Ser Ser Leu Leu Leu Ser Arg Ser Lys Ser Arg Leu Ala Ser Pro Ala
515 520 525

Ala Ala Ala Ala Ser Ser Met Arg Arg Arg Leu Val Leu Gly Val Gly
530 535 540

Ala Ala Ala Ala Pro Ala Val Ala Ala Leu Ala Ala Ser Ala Thr Pro
545 550 555 560

Ala Ala Leu Arg Asp Cys Ala Ala Thr Leu Leu Ile Thr Ala Gly Ala
565 570 575

Tyr Ser Leu Val Arg Ala Phe Asp Gly Leu Thr Ala Arg Arg Leu Ile
580 585 590

Glu Gln Asn Leu Ser Arg Lys Ile Val His Val Leu Ser Gly Val Leu
595 600 605

Phe Met Ser Ser Trp Pro Leu Phe Ser Asn Ser Thr Glu Ala Arg Phe
610 615 620

Phe Ala Ala Ile Val Pro Leu Leu Asn Cys Ile Arg Leu Leu Thr Tyr
625 630 635 640

Gly Leu Arg Leu Ser Thr Asp Glu Ala Leu Val Lys Ser Val Thr Arg
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645

650

655

Glu Gly Lys Pro Glu Glu Leu Leu Arg Gly Pro Leu Tyr Tyr Val Ile
660 665 670

Val Leu Leu Val Ser Val Leu Val Phe Trp Arg Gln Ser Pro Ile Gly
675 680 685

Ile Val Ser Leu Ser Met Met Ser Gly Gly Asp Gly Phe Ala Asp Ile
690 695 700

Val Gly Arg Arg Tyr Gly Ser Ala Lys Leu Pro Phe Asn Glu Asn Lys
705 710 715 720

Ser Trp Ile Gly Ser Ile Ser Met Phe Ile Ser Gly Phe Leu Leu Ser
725 730 735

Ala Leu Met Leu Phe Tyr Phe Ser Cys Leu Gly Tyr Phe Thr Val Cys
740 745 750

Trp Asp Leu Ala Leu Gly Lys Leu Ala Leu Val Ala Leu Ala Ala Thr
755 760 765

Val Val Glu Cys Ile Pro Val Asn Asp Val Val Asp Asp Asn Ile Ser
770 775 780

Val Pro Leu Ala Thr Met Leu Ala Ala Tyr Leu Leu Phe Gly Tyr Ser
785 790 795 800

Ser Cys Cys

<210> 49
<211> 657
<212> PRT
<213> Oryza sativa

<400> 49

Met Asn Arg Phe Ala Asp Leu Thr Asn Gly Glu Phe Arg Ala Thr Tyr
1 5 10 15

Leu Gly Thr Thr Pro Ala Gly Arg Gly Arg Arg Val Gly Glu Ala Tyr
20 25 30

Arg His Asp Gly Val Glu Ala Leu Pro Asp Ser Val Asp Trp Arg Asp
35 40 45

Lys Gly Ala Val Val Ala Pro Val Lys Asn Gln Gly Gln Cys Gly Ser
50 55 60

Cys Trp Ala Phe Ser Ala Val Ala Ala Val Glu Gly Ile Asn Lys Ile
65 70 75 80

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Val Thr Gly Glu Leu Val Ser Leu Ser Glu Gln Glu Leu Val Glu Cys
85 90 95

Ala Arg Asn Gly Gln Asn Ser Gly Cys Asn Gly Gly Ile Met Asp Asp
100 105 110

Ala Phe Ala Phe Ile Ala Arg Asn Gly Gly Leu Asp Thr Glu Glu Asp
115 120 125

Tyr Pro Tyr Thr Ala Met Asp Gly Lys Cys Asn Leu Ala Lys Arg Ser
130 135 140

Arg Lys Val Val Ser Ile Asp Gly Phe Glu Asp Val Pro Glu Asn Asp
145 150 155 160

Glu Leu Ser Leu Gln Lys Ala Val Ala His Gln Pro Val Ser Val Ala
165 170 175

Ile Asp Ala Gly Gly Arg Glu Phe Gln Leu Tyr Asp Ser Gly Val Phe
180 185 190

Thr Gly Arg Cys Gly Thr Asn Leu Asp His Gly Val Val Ala Val Gly
195 200 205

Tyr Gly Thr Asp Ala Ala Thr Gly Ala Ala Tyr Trp Thr Val Arg Asn
210 215 220

Ser Trp Gly Pro Asp Trp Gly Glu Asn Gly Tyr Ile Arg Met Glu Arg
225 230 235 240

Asn Val Thr Ala Arg Thr Gly Lys Cys Gly Ile Ala Met Met Ala Ser
245 250 255

Tyr Pro Ile Lys Lys Gly Pro Asn Pro Lys Pro Ser Pro Pro Ser Pro
260 265 270

Ala Pro Ser Pro Pro Gln Gln Cys Asp Arg Tyr Ser Lys Cys Pro Ala
275 280 285

Gly Thr Thr Cys Cys Cys Asn Tyr Gly Ile Arg Asn His Cys Ile Val
290 295 300

Trp Gly Cys Cys Pro Val Glu Gly Ala Thr Cys Cys Lys Asp His Ser
305 310 315 320

Thr Cys Cys Pro Lys Glu Tyr Pro Val Cys Asn Ala Lys Ala Arg Thr
325 330 335

Cys Ser Lys Ser Val Tyr Arg Met Ala Ala Ala Ala Arg Pro Val Asp
340 345 350

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Val Val Arg His Phe Pro Cys Ser Ser Ser Val Ala Ala Ser Ser Ser
355 360 365

Leu Leu Leu Ser Arg Ser Lys Ser Arg Leu Ala Ser Pro Ala Ala Ala
370 375 380

Ala Ala Ser Ser Met Arg Arg Arg Leu Val Leu Gly Val Gly Ala Ala
385 390 395 400

Ala Ala Pro Ala Val Ala Ala Leu Ala Ala Ser Ala Thr Pro Ala Ala
405 410 415

Leu Arg Asp Cys Ala Ala Thr Leu Leu Ile Thr Ala Gly Ala Tyr Ser
420 425 430

Leu Val Arg Ala Phe Asp Gly Leu Thr Ala Arg Arg Leu Ile Glu Gln
435 440 445

Asn Leu Ser Arg Lys Ile Val His Val Leu Ser Gly Val Leu Phe Met
450 455 460

Ser Ser Trp Pro Leu Phe Ser Asn Ser Thr Glu Ala Arg Phe Phe Ala
465 470 475 480

Ala Ile Val Pro Leu Leu Asn Cys Ile Arg Leu Leu Thr Tyr Gly Leu
485 490 495

Arg Leu Ser Thr Asp Glu Ala Leu Val Lys Ser Val Thr Arg Glu Gly
500 505 510

Lys Pro Glu Glu Leu Leu Arg Gly Pro Leu Tyr Tyr Val Ile Val Leu
515 520 525

Leu Val Ser Val Leu Val Phe Trp Arg Gln Ser Pro Ile Gly Ile Val
530 535 540

Ser Leu Ser Met Met Ser Gly Gly Asp Gly Phe Ala Asp Ile Val Gly
545 550 555 560

Arg Arg Tyr Gly Ser Ala Lys Leu Pro Phe Asn Glu Asn Lys Ser Trp
565 570 575

Ile Gly Ser Ile Ser Met Phe Ile Ser Gly Phe Leu Leu Ser Ala Leu
580 585 590

Met Leu Phe Tyr Phe Ser Cys Leu Gly Tyr Phe Thr Val Cys Trp Asp
595 600 605

Leu Ala Leu Gly Lys Leu Ala Leu Val Ala Leu Ala Thr Val Val
610 615 620

Glu Cys Ile Pro Val Asn Asp Val Val Asp Asp Asn Ile Ser Val Pro
625 630 635 640

Leu Ala Thr Met Leu Ala Ala Tyr Leu Leu Phe Gly Tyr Ser Ser Cys
645 650 655

Cys

<210> 50
<211> 246
<212> PRT
<213> Oryza sativa

<400> 50

Met Ala Ala Ala Ile Pro Pro Glu Ala Ser Gly Leu Ala His Asp Leu
1 5 10 15

Gly Ser Ala Ala Val Thr Ala Gly Val Ala Leu Ala Leu Leu Arg Phe
20 25 30

Phe Glu Glu Leu Ala Lys Arg Gly Val Phe Glu Gln Lys Leu Asn Arg
35 40 45

Lys Leu Val His Ile Thr Ile Gly Met Val Phe Leu Leu Phe Trp Pro
50 55 60

Leu Phe Ser Ser Gly Ser Tyr Ala Pro Phe Leu Ala Ala Val Ala Pro
65 70 75 80

Gly Ile Asn Ile Ile Arg Met Leu Leu Leu Gly Leu Gly Val Met Lys
85 90 95

Asn Glu Ala Met Val Lys Ser Met Ser Arg Ser Gly Asp Pro Arg Glu
100 105 110

Leu Leu Lys Gly Pro Leu Tyr Tyr Ala Thr Thr Ile Thr Phe Ala Thr
115 120 125

Ser Ile Phe Trp Arg Thr Ser Pro Ile Ala Ile Ala Leu Ile Cys Asn
130 135 140

Leu Cys Ala Gly Asp Gly Ile Ala Asp Ile Val Gly Arg Arg Leu Gly
145 150 155 160

Gln Glu Lys Leu Pro Tyr Asn Pro Asn Lys Ser Tyr Ala Gly Ser Ile
165 170 175

Ala Met Ala Leu Ala Gly Phe Met Ala Ser Ile Gly Tyr Met His Tyr
180 185 190

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Phe Gln Ser Phe Gly Phe Ile Glu Glu Ser Trp Ser Leu Ala Phe Gly
195 200 205

Phe Leu Val Val Ser Val Thr Ala Ala Leu Val Glu Ser His Pro Ile
210 215 220

Ser Thr His Leu Asp Asp Asn Leu Thr Val Pro Leu Thr Ser Phe Leu
225 230 235 240

Val Gly Ser Leu Val Phe
245

<210> 51
<211> 271
<212> PRT
<213> Oryza sativa

<400> 51

Met Glu Ser Pro Val Leu Arg Asp Ala Gly Ala Ala Val Leu Thr Gly
1 5 10 15

Ala Thr Ala Leu Ala Val Leu Arg Phe Trp Glu Glu Val Gly Asn Arg
20 25 30

Ala Leu Leu Asp Gln Lys Leu Cys Arg Lys Leu Val His Ile Thr Val
35 40 45

Gly Leu Val Tyr Phe Leu Met Trp Pro Leu Phe Ser Ala Asp Asp Val
50 55 60

Tyr Ala Pro Phe Leu Ala Ser Ile Val Ile Ala Phe Asn Ile Ile Lys
65 70 75 80

Val Thr Leu Ile Gly Leu Gly Ile Val Lys Asp Asp Gly Val Ile Asn
85 90 95

Ser Met Thr Arg Asn Gly Asp Pro Arg Glu Leu Leu Lys Gly Pro Leu
100 105 110

Tyr Tyr Ala Cys Ala Met Thr Leu Ala Thr Val Ile Phe Trp Arg Thr
115 120 125

Ser Pro Ile Ser Ile Ala Val Ile Cys Asn Leu Cys Ala Gly Asp Gly
130 135 140

Val Ala Asp Ile Ala Gly Arg Gln Leu Gly Arg Ile Lys Leu Pro Tyr
145 150 155 160

Asn Pro Asp Lys Ser Tyr Ala Gly Ser Ile Ala Met Phe Leu Ala Gly
165 170 175

Phe Leu Ala Ser Ile Leu Tyr Met Cys Tyr Phe His Leu Phe Gly Phe
180 185 190

Val Glu Glu Ser Trp Thr Met Val Ile Ala Phe Gly Val Thr Ser Leu
195 200 205

Ser Ala Ala Ile Val Glu Ser Leu Pro Ile Ser Thr Arg Leu Asp Asp
210 215 220

Asn Leu Thr Val Pro Leu Ala Ser Val Leu Ile Gly Val Leu Val Phe
225 230 235 240

Tyr Tyr Ile Gly Ala Arg Asn Leu Cys Cys Met Ser Ala Asp Ser Ser
245 250 255

Asp Ile Ser Ala Leu Val Gln Asn Gln Met Phe Leu Gly Arg Phe
260 265 270

<210> 52
<211> 271
<212> PRT
<213> Oryza sativa

<400> 52

Met Glu Ser Gln Val Leu Arg Asp Ala Gly Ala Ala Val Leu Thr Gly
1 5 10 15

Ala Thr Ala Leu Ala Val Leu Arg Phe Trp Glu Glu Val Gly Asn Arg
20 25 30

Ala Leu Leu Asp Gln Lys Leu Cys Arg Lys Leu Val His Ile Thr Val
35 40 45

Gly Leu Val Tyr Phe Leu Met Trp Pro Leu Phe Ser Ala Asp Asp Val
50 55 60

Tyr Ala Pro Phe Leu Ala Ser Ile Val Ile Ala Phe Asn Ile Ile Lys
65 70 75 80

Val Thr Leu Ile Gly Leu Gly Ile Val Lys Asp Asp Gly Val Ile Asn
85 90 95

Ser Met Thr Arg Asn Gly Asp Pro Arg Glu Leu Leu Lys Gly Pro Leu
100 105 110

Tyr Tyr Ala Cys Ala Met Thr Leu Ala Thr Val Ile Phe Trp Arg Thr
115 120 125

Ser Pro Ile Ser Ile Ala Val Ile Cys Asn Leu Cys Ala Gly Asp Gly
130 135 140

Val Ala Asp Ile Ala Gly Arg Gln Leu Gly Arg Ile Lys Leu Pro Tyr
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Ala Val Val Pro Leu Leu Asn Ser Ile Arg Leu Leu Ile Tyr Gly Leu
130 135 140

Arg Leu Tyr Thr Asp Glu Ala Leu Val Lys Ser Val Thr Arg Glu Gly
145 150 155 160

Lys Pro Glu Glu Leu Leu Arg Gly Pro Leu Tyr Tyr Val Leu Val Leu
165 170 175

Leu Phe Ser Val Leu Val Phe Trp Arg Glu Ser Pro Val Gly Ile Val
180 185 190

Ser Leu Ser Met Met Ser Gly Gly Asp Gly Phe Ala Asp
195 200 205

<210> 54
<211> 202
<212> PRT
<213> Sorghum bicolor

<220>
<221> misc_feature
<222> (18)..(18)
<223> Xaa can be any naturally occurring amino acid

<400> 54

Lys Leu Ser Arg Lys Leu Val His Ile Ser Val Gly Leu Val Phe Leu
1 5 10 15

Leu Xaa Trp Pro Leu Phe Ser Ser Gly Trp Tyr Ala Pro Phe Leu Ala
20 25 30

Ala Leu Ala Pro Gly Val Asn Val Ile Arg Met Leu Leu Leu Gly Leu
35 40 45

Gly Leu Met Lys Asn Glu Ala Met Val Lys Ser Ile Ser Arg Ser Gly
50 55 60

Asp Tyr Arg Glu Leu Leu Lys Gly Pro Leu Tyr Tyr Ala Thr Thr Ile
65 70 75 80

Thr Phe Ala Thr Ser Val Leu Trp Arg Thr Ser Pro Val Ala Ile Ala
85 90 95

Leu Ile Cys Asn Leu Cys Ala Gly Asp Gly Ile Ala Asp Val Val Gly
100 105 110

Arg Arg Leu Gly Lys Glu Lys Leu Pro Tyr Asn Pro Asn Lys Ser Tyr
115 120 125

Ala Gly Ser Ile Ala Met Ala Val Ala Gly Phe Leu Ala Ser Val Gly
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130

135

140

Tyr Met His Tyr Phe His Thr Phe Gly Phe Ile Glu Glu Thr Trp Tyr
 145 150 155 160

Met Ala Leu Gly Phe Leu Val Val Ser Val Ala Ala Thr Leu Val Glu
 165 170 175

Ser His Pro Ile Ser Thr Glu Leu Asp Asp Asn Leu Thr Val Pro Leu
 180 185 190

Thr Ser Phe Leu Val Gly Ser Leu Ile Phe
 195 200

<210> 55
 <211> 191
 <212> PRT
 <213> Sorghum bicolor

<400> 55

Ser Thr Ser Thr Cys Ser Asn Ser Thr Glu Ala Arg Tyr Phe Ala Ala
 1 5 10 15

Val Val Pro Leu Leu Asn Ser Ile Arg Leu Leu Ile Tyr Gly Leu Arg
 20 25 30

Leu Tyr Thr Asp Glu Ala Leu Val Lys Ser Val Thr Arg Glu Gly Lys
 35 40 45

Pro Glu Glu Leu Leu Arg Gly Pro Leu Tyr Tyr Val Leu Val Leu Leu
 50 55 60

Phe Ser Val Leu Val Phe Trp Arg Glu Ser Pro Val Gly Ile Val Ser
 65 70 75 80

Leu Ser Met Met Ser Gly Gly Asp Gly Phe Ala Asp Ile Val Gly Arg
 85 90 95

Arg Tyr Gly Ser Val Lys Leu Pro Phe Asn Lys Lys Lys Ser Trp Ala
 100 105 110

Gly Ser Ile Ser Met Phe Ile Ser Gly Phe Leu Leu Ser Ala Met Met
 115 120 125

Met Phe Tyr Phe Ser Ser Leu Gly Tyr Ile Asp Val Ile Trp Gln Glu
 130 135 140

Ala Leu Gly Lys Leu Ala Leu Val Ala Leu Ala Thr Val Val Glu
 145 150 155 160

Cys Ile Pro Val Thr Glu Val Val Asp Asp Asn Ile Ser Val Pro Leu
 165 170 175

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Ala Thr Met Leu Val Ala Phe Leu Leu Phe Ser Ser Asn Ala Gln
180 185 190

<210> 56
<211> 296
<212> PRT
<213> Triticum aestivum

<400> 56

Leu His Thr Arg Leu Arg Ser Arg Pro Leu Cys Ser Pro Thr Ser Ser
1 5 10 15

Ala Pro Thr Val Ser Ser Ser Ser Ala Pro Pro Ser Leu Arg Phe Arg
20 25 30

Phe Gly Phe Pro Arg Arg Gly Cys Ala Ala Asp Arg Ser Arg Arg Ala
35 40 45

Thr Thr Met Ala Ala Val Val Ser Pro Gly Asp Gly Gly Leu Val His
50 55 60

Asp Leu Val Ser Ser Gly Val Thr Ala Ala Ile Ala Leu Gly Leu Leu
65 70 75 80

Arg Phe Phe Glu Glu Leu Ala Lys Arg Gly Val Cys Asp Gln Lys Leu
85 90 95

Asn Arg Lys Leu Val His Ile Thr Ile Gly Met Val Phe Leu Leu Phe
100 105 110

Trp Pro Leu Phe Ser Ser Gly Arg Tyr Ala Pro Phe Phe Ala Ala Leu
115 120 125

Ala Pro Gly Ile Asn Ile Ile Arg Met Leu Leu Leu Gly Leu Gly Ile
130 135 140

Met Lys Asn Glu Ala Met Val Lys Ser Met Ser Arg Ser Gly Asp His
145 150 155 160

Arg Glu Leu Leu Lys Gly Pro Leu Tyr Tyr Ala Thr Thr Ile Thr Leu
165 170 175

Ala Thr Ser Val Leu Trp Arg Thr Ser Pro Ile Ala Ile Ala Leu Val
180 185 190

Cys Asn Leu Cys Ala Gly Asp Gly Ile Ala Asp Val Val Gly Arg Arg
195 200 205

Leu Gly Lys Glu Lys Leu Pro Tyr Asn Pro Asn Lys Ser Tyr Ala Gly
210 215 220

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Ser Ile Ala Met Ala Val Ala Gly Phe Leu Ala Ser Ile Gly Tyr Met
225 230 235 240

His Tyr Phe His Ser Phe Gly Leu Met Glu Lys Ser Trp Tyr Met Thr
245 250 255

Leu Gly Phe Leu Val Val Ser Val Ala Ala Ala Leu Val Glu Ser His
260 265 270

Pro Ile Ser Thr Glu Leu Asp Asp Asn Leu Thr Val Pro Leu Thr Ser
275 280 285

Phe Leu Val Gly Ser Leu Ile Leu
290 295

<210> 57
<211> 292
<212> PRT
<213> Triticum aestivum

<400> 57

Leu Cys Glu Ser Val Cys Glu Leu Arg Gly Ala Ser Val Gly Gly Ser
1 5 10 15

Met Trp Pro Glu Ser Pro Pro Leu Arg Asp Ala Gly Ala Ala Val Leu
20 25 30

Thr Gly Cys Val Ala Met Ala Val Leu Arg Phe Trp Glu Glu Val Gly
35 40 45

Asn Arg Ala Leu Leu Asp Gln Lys Leu Cys Arg Lys Leu Val His Ile
50 55 60

Ser Val Gly Leu Val Tyr Phe Leu Met Trp Pro Leu Phe Ser Ala Asp
65 70 75 80

Asp Val Tyr Ala Pro Phe Leu Ala Ser Ile Val Ile Ala Leu Asn Ile
85 90 95

Ile Lys Val Ile Leu Ile Gly Ser Gly Val Val Lys Asp Asp Gly Val
100 105 110

Val Asn Ser Met Thr Arg Asn Gly Asp Tyr Arg Glu Leu Leu Lys Gly
115 120 125

Pro Leu Tyr Tyr Ala Cys Thr Ile Thr Leu Thr Thr Val Ile Phe Trp
130 135 140

Arg Thr Ser Pro Ile Ser Ile Ala Val Ile Cys Asn Leu Cys Ala Gly
145 150 155 160

Asp Gly Val Ala Asp Ile Ala Gly Arg Arg Phe Gly His Val Lys Leu
 165 170 175

Pro His Asn Pro Asp Lys Ser Tyr Ala Gly Ser Ile Ala Met Phe Phe
 180 185 190

Ala Gly Phe Val Ala Ser Ile Leu Phe Met Cys Tyr Phe His Leu Phe
 195 200 205

Gly Phe Val Glu Gln Ser Trp Thr Met Val Ala Ala Phe Gly Val Thr
 210 215 220

Ser Leu Ala Ala Ala Ile Val Glu Ser Leu Pro Val Ser Thr Leu Leu
 225 230 235 240

Asp Asp Asn Leu Thr Thr Pro Ile Ala Ser Ala Leu Val Gly Ser Leu
 245 250 255

Val Phe Tyr Tyr Val Gly Gly Gly Gly Gly Ala Gly Ser Gly Asp Gly
 260 265 270

Thr Ser Ile Ser Ala Thr Ala Ala Met Val Phe Ala Gly Ser Ser Tyr
 275 280 285

Tyr Ser Glu Gly
 290

<210> 58
 <211> 300
 <212> PRT
 <213> Triticum aestivum

<400> 58

Met Ala Ala Ala Arg Pro Ala Leu Pro Ser Ser Pro Thr Ser Leu Leu
 1 5 10 15

Leu Ala Arg Ser Thr Ser Ala Pro Asp Leu Ala Ala Arg Arg Pro Arg
 20 25 30

Arg Trp Leu Val Ala Ala Ala Gly Val Pro Ala Val Ala Gly Ala Leu
 35 40 45

Ala Ala Ser Ala Ser Thr Pro Ala Ala Ser Met Leu Leu Arg Asp Gly
 50 55 60

Gly Ala Thr Leu Leu Val Thr Ala Gly Ala Tyr Ser Leu Val Arg Ala
 65 70 75 80

Phe Asp Ala Leu Thr Glu Arg Arg Leu Val Gln Gln Ser Leu Ser Arg
 85 90 95

Lys Val Val His Val Leu Ser Gly Val Phe Phe Met Ala Ser Trp Pro
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Leu Phe Ser Asn Ser Thr Ser Ala Arg Phe Phe Ala Ala Val Val Pro
115 120 125

Phe Leu Asn Cys Val Arg Leu Leu Thr Tyr Gly Leu Gly Phe Tyr Ser
130 135 140

Asp Glu Ala Leu Val Lys Ser Val Thr Arg Glu Gly Lys Arg Glu Glu
145 150 155 160

Leu Leu Arg Gly Pro Leu Tyr Tyr Val Ile Val Leu Leu Ile Ile Val
165 170 175

Leu Val Phe Trp Arg Asp Ser Pro Ile Gly Ile Val Ser Leu Ser Met
180 185 190

Met Ser Gly Gly Asp Gly Phe Ala Asp Ile Val Gly Arg Arg Phe Gly
195 200 205

Ser Leu Lys Leu Pro Phe Asn Lys Lys Lys Ser Trp Val Gly Ser Ala
210 215 220

Ala Met Phe Ile Ser Gly Phe Leu Leu Ser Ala Leu Met Leu Ser Tyr
225 230 235 240

Phe Ser Trp Leu Gly Tyr Ile His Val Ser Trp Asp Gln Ala Leu Gly
245 250 255

Lys Leu Val Leu Val Ala Leu Ala Ala Thr Val Val Glu Cys Ile Pro
260 265 270

Val Thr Asp Val Val Asp Asp Asn Ile Ser Val Pro Leu Ala Thr Met
275 280 285

Leu Val Ala Phe Leu Leu Phe Gly Asn Thr Ala Asn
290 295 300

<210> 59
<211> 157
<212> PRT
<213> Zea mays

<400> 59

Leu Ala Ala Leu Thr Ile Thr Thr Leu Leu Leu Tyr Arg Glu Leu Leu
1 5 10 15

Arg Gly Pro Leu Tyr Tyr Val Leu Val Leu Leu Phe Ser Val Leu Val
20 25 30

Phe Trp Arg Glu Ser Pro Ile Gly Ile Val Ser Leu Ser Met Met Ser
35 40 45

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Gly Gly Asp Gly Phe Ala Asp Ile Val Gly Arg Arg Tyr Gly Ser Ala
50 55 60

Lys Leu Pro Phe Asn Arg Lys Lys Ser Trp Ala Gly Ser Ile Ser Met
65 70 75 80

Phe Ile Ser Gly Phe Leu Leu Ser Ala Met Met Met Leu Tyr Phe Ser
85 90 95

Ser Leu Gly Tyr Ile Asp Val Ile Trp Glu Glu Ala Leu Gly Lys Leu
100 105 110

Ala Leu Val Ala Leu Ala Ala Thr Val Val Glu Cys Val Pro Val Thr
115 120 125

Glu Val Val Asp Asp Asn Ile Ser Val Pro Leu Ala Thr Met Leu Val
130 135 140

Ala Phe Leu Leu Phe Ser Ser Asn Arg Thr Ile Val Asn
145 150 155

<210> 60
<211> 188
<212> PRT
<213> Zea mays

<400> 60

Ala Pro Pro Ala Ala Leu Gln Asp Gly Ala Val Thr Val Leu Ile Thr
1 5 10 15

Ala Gly Ala Tyr Ser Leu Val Arg Val Phe Asp Glu Leu Thr Glu Arg
20 25 30

Arg Leu Ile Glu Lys Ser Leu Ser Arg Lys Val Val His Val Leu Ser
35 40 45

Gly Val Leu Phe Met Ser Ser Trp Pro Leu Phe Ser Asn Ser Thr Glu
50 55 60

Ala Arg Tyr Phe Ala Ala Val Val Pro Phe Leu Asn Ser Met Arg Leu
65 70 75 80

Leu Ile Tyr Gly Leu Arg Leu Tyr Thr Asp Glu Ala Leu Val Lys Ser
85 90 95

Val Thr Arg Glu Gly Lys Pro Glu Glu Leu Leu Arg Gly Pro Leu Tyr
100 105 110

Tyr Val Leu Val Leu Leu Phe Ser Val Leu Val Phe Trp Arg Glu Ser
115 120 125

Ren-01-125.ST25.txt

Pro Ile Gly Ile Val Ser Leu Ser Met Met Ser Gly Gly Asp Gly Phe
130 135 140

Ala Asp Ile Val Gly Arg Arg Tyr Gly Ser Ala Lys Leu Pro Phe Asn
145 150 155 160

Arg Lys Lys Ser Trp Gly Arg Ser Ile Ser Met Phe Ile Ser Cys Phe
165 170 175

Leu Leu Ser Ala Met Met Met Leu Tyr Phe Ser Ser
180 185

<210> 61
<211> 303
<212> PRT
<213> Zea mays

<400> 61

Met Ala Ala Ala Ala Ala Trp Thr Gly Ala Ala Ser Pro Asn Ser Leu
1 5 10 15

Leu Leu Ser Arg Ser Pro Pro His Ala Ala Ala Leu Ala Pro Ser Pro
20 25 30

Gly Ser Ser Met Arg Arg Arg Leu Leu Leu Gly Val Gly Thr Pro Ala
35 40 45

Val Ala Ala Leu Ala Ala Ala Ala Pro Pro Ala Val Leu Gln Asp Gly
50 55 60

Ala Val Thr Val Leu Ile Thr Ala Gly Ala Tyr Ser Leu Val Arg Val
65 70 75 80

Phe Asp Glu Leu Thr Glu Arg Arg Leu Ile Glu Lys Ser Leu Ser Arg
85 90 95

Lys Val Val His Val Leu Ser Gly Val Leu Phe Met Ser Ser Trp Pro
100 105 110

Leu Phe Ser Asn Ser Thr Glu Ala Arg Tyr Phe Ala Ala Val Val Pro
115 120 125

Phe Leu Asn Ser Met Arg Leu Leu Ile Tyr Gly Leu Arg Leu Tyr Thr
130 135 140

Asp Glu Ala Leu Val Lys Ser Val Thr Arg Glu Gly Lys Pro Glu Glu
145 150 155 160

Leu Leu Arg Gly Pro Leu Tyr Tyr Val Leu Val Leu Leu Phe Ser Val
165 170 175

Leu Val Phe Trp Arg Glu Ser Pro Ile Gly Ile Val Ser Leu Ser Met
 180 185 190

Met Ser Gly Gly Asp Gly Phe Ala Asp Ile Val Gly Arg Arg Tyr Gly
 195 200 205

Ser Ala Lys Leu Pro Phe Asn Arg Lys Lys Ser Trp Ala Gly Ser Ile
 210 215 220

Ser Met Phe Ile Ser Gly Phe Leu Leu Ser Ala Met Met Met Leu Tyr
 225 230 235 240

Phe Ser Ser Leu Gly Tyr Ile Asp Val Ile Trp Glu Glu Ala Leu Gly
 245 250 255

Lys Leu Ala Leu Val Ala Leu Ala Ala Thr Val Val Glu Cys Val Pro
 260 265 270

Val Thr Glu Val Val Asp Asp Asn Ile Ser Val Pro Leu Ala Thr Met
 275 280 285

Leu Val Ala Phe Leu Leu Phe Ser Ser Asn Arg Thr Ile Val Asn
 290 295 300

<210> 62
 <211> 267
 <212> PRT
 <213> Zea mays

<400> 62

Met Arg Arg Arg Leu Leu Leu Gly Val Gly Thr Pro Ala Val Ala Ala
 1 5 10 15

Leu Ala Ala Ala Ala Pro Pro Ala Val Leu Gln Asp Gly Ala Val Thr
 20 25 30

Val Leu Ile Thr Ala Gly Ala Tyr Ser Leu Val Arg Val Phe Asp Glu
 35 40 45

Leu Thr Glu Arg Arg Leu Ile Glu Lys Ser Leu Ser Arg Lys Val Val
 50 55 60

His Val Leu Ser Gly Val Leu Phe Met Ser Ser Trp Pro Leu Val Ser
 65 70 75 80

Asn Ser Thr Glu Ala Arg Tyr Phe Ala Ala Val Val Pro Phe Leu Asn
 85 90 95

Ser Met Arg Leu Leu Ile Tyr Gly Leu Arg Leu Tyr Thr Asp Glu Ala
 100 105 110

Leu Val Lys Ser Val Thr Arg Glu Gly Lys Pro Glu Glu Leu Leu Arg
 Page 62

Pro Leu Tyr Tyr Val Leu Val Leu Leu Phe Ser Val Leu Val Phe Trp
130 135 140

Arg Glu Ser Pro Ile Gly Ile Val Ser Leu Ser Met Met Ser Gly Gly
145 150 155 160

Asp Gly Phe Ala Asp Ile Val Gly Arg Arg Tyr Gly Ser Ala Lys Leu
165 170 175

Pro Phe Asn Arg Lys Lys Ser Trp Ala Gly Ser Ile Ser Met Phe Ile
180 185 190

Ser Gly Phe Leu Leu Ser Ala Met Met Met Leu Tyr Phe Ser Ser Leu
195 200 205

Gly Tyr Ile Asp Val Ile Trp Glu Glu Ala Leu Gly Lys Leu Ala Leu
210 215 220

Val Ala Leu Ala Ala Thr Val Val Glu Cys Val Pro Val Thr Glu Val
225 230 235 240

Val Asp Asp Asn Ile Ser Val Pro Leu Ala Thr Met Leu Val Ala Phe
245 250 255

Leu Leu Phe Ser Ser Asn Arg Thr Ile Val Asn
260 265

<210> 63
<211> 236
<212> PRT
<213> Zea mays

<400> 63

Ala Arg Gly Thr Ala Gly Ala Tyr Ser Leu Val Arg Val Phe Asp Glu
1 5 10 15

Leu Thr Glu Arg Arg Leu Ile Glu Lys Ser Leu Ser Arg Lys Val Val
20 25 30

His Val Leu Ser Gly Val Leu Phe Met Ser Ser Trp Pro Leu Phe Ser
35 40 45

Asn Ser Thr Glu Ala Arg Tyr Phe Ala Ala Val Val Pro Phe Leu Asn
50 55 60

Ser Met Arg Leu Leu Ile Tyr Gly Leu Arg Leu Tyr Thr Asp Glu Ala
65 70 75 80

Leu Val Lys Ser Val Thr Arg Glu Gly Lys Pro Glu Glu Leu Leu Arg
85 90 95

Gly Pro Leu Tyr Tyr Val Leu Val Leu Leu Phe Ser Val Leu Val Phe
100 105 110

Trp Arg Glu Ser Pro Ile Gly Ile Val Ser Leu Ser Met Met Ser Gly
115 120 125

Gly Asp Gly Phe Ala Asp Ile Val Gly Arg Arg Tyr Gly Ser Ala Lys
130 135 140

Leu Pro Phe Asn Arg Lys Lys Ser Trp Ala Gly Ser Ile Ser Met Phe
145 150 155 160

Ile Ser Gly Phe Leu Leu Ser Ala Met Met Met Leu Tyr Phe Ser Ser
165 170 175

Leu Gly Tyr Ile Asp Val Ile Trp Glu Glu Ala Leu Gly Lys Leu Ala
180 185 190

Leu Val Ala Leu Ala Ala Thr Val Val Glu Cys Val Pro Val Thr Glu
195 200 205

Val Val Asp Asp Asn Ile Ser Val Pro Leu Ala Thr Met Leu Val Ala
210 215 220

Phe Leu Leu Phe Ser Ser Asn Arg Thr Ile Val Asn
225 230 235

<210> 64
<211> 302
<212> PRT
<213> Zea mays

<400> 64

Leu Ser Tyr Ser Thr His Arg Ala His Leu Leu Gln Ser Arg Pro Leu
1 5 10 15

Ser Pro Ser Pro Thr Val Pro Ala Gly Ala Ala Ser Ala Ser Cys Ala
20 25 30

Pro Arg Ser Leu Cys Phe Arg Arg Arg Ser Ser Arg Leu Ala Ala
35 40 45

Glu Arg Thr Arg Arg Pro Thr Met Ala Ala Ala Ile Ser Leu Glu Ala
50 55 60

Gly Gly Ala Leu Ala His Asp Leu Gly Ser Ala Val Val Thr Gly Gly
65 70 75 80

Val Ala Leu Ala Leu Leu Lys Phe Phe Glu Glu Leu Ala Lys Arg Gly
85 90 95

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Val Phe Glu Gln Lys Leu Ser Arg Lys Leu Val His Ile Ser Val Gly
100 105 110

Leu Val Phe Met Leu Phe Trp Pro Leu Phe Ser Ser Gly Trp Tyr Thr
115 120 125

Pro Phe Leu Ala Ala Leu Ala Pro Gly Val Asn Ile Ile Arg Met Leu
130 135 140

Leu Leu Gly Leu Gly Leu Met Lys Asn Glu Ala Met Val Lys Ser Met
145 150 155 160

Ser Arg Ser Gly Asp Tyr Arg Glu Leu Leu Lys Gly Pro Leu Tyr Tyr
165 170 175

Ala Ala Thr Ile Thr Phe Ala Thr Ser Leu Leu Trp Arg Thr Ser Pro
180 185 190

Val Ala Ile Ala Leu Ile Cys Asn Leu Cys Ala Gly Asp Gly Ile Ala
195 200 205

Asp Val Val Gly Arg Arg Leu Gly Lys Glu Lys Leu Pro Tyr Asn Pro
210 215 220

Asn Lys Ser Tyr Ala Gly Ser Ile Ala Met Ala Val Ala Gly Phe Leu
225 230 235 240

Ala Ser Val Gly Tyr Met His Tyr Phe His Thr Phe Gly Phe Ile Glu
245 250 255

Glu Thr Trp Tyr Met Ala Leu Ser Phe Leu Val Val Ser Val Ala Ala
260 265 270

Ala Leu Val Glu Ser His Pro Ile Ser Thr Glu Leu Asp Asp Asn Leu
275 280 285

Thr Val Leu Leu Thr Ser Phe Leu Val Gly Ser Leu Ile Phe
290 295 300

<210> 65
<211> 312
<212> PRT
<213> Zea mays

<400> 65

Met Leu Ser Leu Ala Ala His Ile Thr Pro Leu Ser Tyr Ser Thr His
1 5 10 15

Arg Ala His Leu Leu Gln Ser Arg Pro Leu Ser Pro Ser Pro Thr Val
20 25 30

Pro Ala Gly Ala Ala Ser Ala Ser Cys Ala Pro Arg Ser Leu Cys Phe
 35 40 45
 Arg Arg Arg Arg Ser Ser Arg Leu Ala Ala Glu Arg Thr Arg Arg Pro
 50 55 60
 Thr Met Ala Ala Ala Ile Ser Leu Glu Ala Gly Gly Ala Leu Ala His
 65 70 75 80
 Asp Leu Gly Ser Ala Val Val Thr Gly Gly Val Ala Leu Ala Leu Leu
 85 90 95
 Lys Phe Phe Glu Glu Leu Ala Lys Arg Gly Val Phe Glu Gln Lys Leu
 100 105 110
 Ser Arg Lys Leu Val His Ile Ser Val Gly Leu Val Phe Met Leu Phe
 115 120 125
 Trp Pro Leu Phe Ser Ser Gly Trp Tyr Thr Pro Phe Leu Ala Ala Leu
 130 135 140
 Ala Pro Gly Val Asn Ile Ile Arg Met Leu Leu Leu Gly Leu Gly Leu
 145 150 155 160
 Met Lys Asn Glu Ala Met Val Lys Ser Met Ser Arg Ser Gly Asp Tyr
 165 170 175
 Arg Glu Leu Leu Lys Gly Pro Leu Tyr Tyr Ala Ala Thr Ile Thr Phe
 180 185 190
 Ala Thr Ser Leu Leu Trp Arg Thr Ser Pro Val Ala Ile Ala Leu Ile
 195 200 205
 Cys Asn Leu Cys Ala Gly Asp Gly Ile Ala Asp Val Val Gly Arg Arg
 210 215 220
 Leu Gly Lys Glu Lys Leu Pro Tyr Asn Pro Asn Lys Ser Tyr Ala Gly
 225 230 235 240
 Ser Ile Ala Met Ala Val Ala Gly Phe Leu Ala Ser Val Gly Tyr Met
 245 250 255
 His Tyr Phe His Thr Phe Gly Phe Ile Glu Glu Thr Trp Tyr Met Ala
 260 265 270
 Leu Ser Phe Leu Val Val Ser Val Ala Ala Ala Leu Val Glu Ser His
 275 280 285
 Pro Ile Ser Thr Glu Leu Asp Asp Asn Leu Thr Val Pro Leu Thr Ser
 290 295 300

Phe Leu Val Gly Ser Leu Ile Phe
305 310

<210> 66
<211> 307
<212> PRT
<213> Zea mays

<400> 66

Met Ala Thr Thr Ser Thr Thr Thr Lys Leu Ser Val Leu Cys Cys Ser
1 5 10 15

Phe Ile Ser Ser Pro Leu Val Asp Ser Pro Pro Ser Leu Ala Phe Phe
20 25 30

Ser Pro Ile Pro Arg Phe Leu Thr Val Arg Ile Ala Thr Ser Phe Arg
35 40 45

Ser Ser Ser Arg Phe Pro Ala Thr Lys Ile Arg Lys Ser Ser Leu Ala
50 55 60

Ala Val Met Phe Pro Glu Asn Ser Val Leu Ser Asp Val Cys Ala Phe
65 70 75 80

Gly Val Thr Ser Ile Val Ala Phe Ser Cys Leu Gly Phe Trp Gly Glu
85 90 95

Ile Gly Lys Arg Gly Ile Phe Asp Gln Lys Leu Ile Arg Lys Leu Val
100 105 110

His Ile Asn Ile Gly Leu Val Phe Met Leu Cys Trp Pro Leu Phe Ser
115 120 125

Ser Gly Ile Gln Gly Ala Leu Phe Ala Ser Leu Val Pro Gly Leu Asn
130 135 140

Ile Val Arg Met Leu Leu Leu Gly Leu Gly Val Tyr His Asp Glu Gly
145 150 155 160

Thr Ile Lys Ser Met Ser Arg His Gly Asp Arg Arg Glu Leu Leu Lys
165 170 175

Gly Pro Leu Tyr Tyr Val Leu Ser Ile Thr Ser Ala Cys Ile Tyr Tyr
180 185 190

Trp Lys Ser Ser Pro Ile Ala Ile Ala Val Ile Cys Asn Leu Cys Ala
195 200 205

Gly Asp Gly Met Ala Asp Ile Val Gly Arg Arg Phe Gly Thr Glu Lys
210 215 220

Leu Pro Tyr Asn Lys Asn Lys Ser Phe Ala Gly Ser Ile Gly Met Ala
Page 67

Ala Val Ile Cys Asn Leu Cys Ala Gly Asp Gly Val Ala Asp Ile Ala
165 170 175

Gly Arg Arg Phe Gly His Val Lys Leu Pro His Asn Pro Glu Lys Ser
180 185 190

Tyr Ala Gly Ser Ile Ala Met Phe Leu Ala Gly Phe Ile Ala Ser Val
195 200 205

Leu Phe Met Cys Tyr Phe Asn Ile Phe Gly Phe Val Glu Lys Ser Trp
210 215 220

Ser Met Val Ala Ala Phe Gly Val Ile Ser Leu Ala Ala Ala Val Val
225 230 235 240

Glu Ser Leu Pro Ile Ser Thr Arg Leu Asp Asp Asn Leu Thr Val Ser
245 250 255

Val Ala Ser Val Leu Val Gly Ala Leu Val Phe Tyr Ser Ile Gly Ala
260 265 270

Arg Asn Leu Cys Cys Met Ser Ser Glu Val Arg Arg Ser Ile Pro Ala
275 280 285

Thr Val Gly Met Val Phe Ala Gly Ser Ser
290 295

<210> 68
<211> 166
<212> PRT
<213> Sorghum bicolor

<400> 68

Met Phe Ser Leu Gly Pro Leu Gly Ala His Thr Ser Pro Leu Ser Cys
1 5 10 15

Ser Thr Tyr His Ala Pro Leu Leu Gln Ser Arg Arg Leu Ser Pro Ser
20 25 30

Pro Thr Ala Pro Ala Ser Ala Ala Ala Ser Cys Ala Pro Arg Ser
35 40 45

Leu Cys Phe Leu Arg Arg Arg Ser Ser Arg Phe Ala Ala Glu Arg Asn
50 55 60

Arg Arg Pro Thr Met Ala Ala Ala Ile Ser Leu Glu Ala Gly Gly Gly
65 70 75 80

Leu Ala His Asp Leu Gly Ser Ala Ala Val Thr Ala Gly Val Ala Leu
85 90 95

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Ala Leu Leu Lys Phe Phe Glu Glu Ile Ala Lys Arg Gly Val Phe Glu
100 105 110

Gln Lys Leu Ser Arg Lys Leu Val His Ile Ser Val Gly Leu Val Phe
115 120 125

Leu Leu Phe Trp Pro Leu Phe Ser Ser Gly Trp Tyr Ala Pro Phe Leu
130 135 140

Ala Ala Leu Ala Pro Gly Val Asn Val Ile Arg Met Leu Leu Leu Gly
145 150 155 160

Leu Gly Leu Met Lys Asn
165

<210> 69
<211> 24
<212> PRT
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<220>
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<222> (2)..(2)
<223> x = v, l, i, or w

<220>
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<222> (3)..(3)
<223> x = t, v, or s

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> x = i, a, or v

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> x = v or i

<220>
<221> MISC_FEATURE
<222> (9)..(9)
<223> x = i or m

<220>
<221> MISC_FEATURE
<222> (11)..(11)
<223> x = a, t, or s

<220>
<221> MISC_FEATURE
<222> (13)..(13)

<223> x = q, m, n, h, p, or a

<220>

<221> MISC_FEATURE

<222> (14)..(14)

<223> x = v, w, or i

<220>

<221> MISC_FEATURE

<222> (15)..(15)

<223> x = v or i

<220>

<221> MISC_FEATURE

<222> (16)..(16)

<223> x = l, f, or p

<220>

<221> MISC_FEATURE

<222> (17)..(17)

<223> x = i, g, l, or f

<220>

<221> MISC_FEATURE

<222> (18)..(18)

<223> x = a or v

<220>

<221> MISC_FEATURE

<222> (19)..(19)

<223> x = w, l, or y

<220>

<221> MISC_FEATURE

<222> (20)..(20)

<223> x = w, l, a, or f

<220>

<221> MISC_FEATURE

<222> (21)..(21)

<223> x = l or f

<220>

<221> MISC_FEATURE

<222> (22)..(22)

<223> x = s, f, d, e, g, a, or n

<220>

<221> MISC_FEATURE

<222> (23)..(23)

<223> x = i, n, or v

<220>

<221> MISC_FEATURE

<222> (24)..(24)

<223> x = p, r, or s

<400> 69

Xaa Xaa Xaa Arg Lys Xaa Xaa His Xaa Gly Xaa Gly Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 70

<211> 30
 <212> PRT
 <213> Artificial - CY Motif 2

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 <222> (1)..(1)
 <223> x = i, f, or l

<220>
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 <222> (2)..(2)
 <223> x = l, i, f, or v

<220>
 <221> MISC_FEATURE
 <222> (3)..(3)
 <223> x = p, g, or t

<220>
 <221> MISC_FEATURE
 <222> (4)..(4)
 <223> x = s, a, or g

<220>
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 <222> (5)..(5)
 <223> x = l, m, i, or v

<220>
 <221> MISC_FEATURE
 <222> (6)..(6)
 <223> x = e, d, n, or s

<220>
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 <222> (7)..(7)
 <223> x = s, t, g, d, or n

<220>
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 <222> (8)..(8)
 <223> x = v, q, or i

<220>
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 <222> (9)..(9)
 <223> x = g, d, n, or e

<220>
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 <222> (10)..(10)
 <223> x = r or s

<220>
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 <222> (11)..(11)
 <223> x = h, s, q, k, or n

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 <222> (12)..(12)
 <223> x = s or none

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<222> (13)..(13)
<223> x = y, p, f, l, or w

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<222> (16)..(16)
<223> x = l, v, f, or i

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<222> (17)..(17)
<223> x = f, y, or a

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<221> MISC_FEATURE
<222> (18)..(18)
<223> x = y or f

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<221> MISC_FEATURE
<222> (19)..(19)
<223> x = a, s, or g

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<222> (20)..(20)
<223> x = l, i, or v

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<221> MISC_FEATURE
<222> (21)..(21)
<223> x = s, t, or a

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<221> MISC_FEATURE
<222> (22)..(22)
<223> x = i, v, or f

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<221> MISC_FEATURE
<222> (23)..(23)
<223> x = g or t

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> x = l, i, or m

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<222> (26)..(26)
<223> x = v, f, i, m, or l

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<221> MISC_FEATURE
<222> (27)..(27)
<223> x = g, a, or i

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> x = g, l, s, w, or f

<220>
<221> MISC_FEATURE
<222> (29)..(29)

<223> x = f, l, or c

<220>

<221> MISC_FEATURE

<222> (30)..(30)

<223> x = f or w

<400> 70

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Thr Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa
20 25 30

<210> 71

<211> 16

<212> PRT

<213> Artificial CY Motif 3

<220>

<223> Conserved Motif

<220>

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<222> (2)..(2)

<223> x = i, m, or v

<220>

<221> MISC_FEATURE

<222> (3)..(3)

<223> x = l or m

<220>

<221> MISC_FEATURE

<222> (4)..(4)

<223> x = v, a, i, or t

<220>

<221> MISC_FEATURE

<222> (6)..(6)

<223> x = a or t

<220>

<221> MISC_FEATURE

<222> (7)..(7)

<223> x = w, f, or l

<220>

<221> MISC_FEATURE

<222> (10)..(10)

<223> x = g or a

<220>

<221> MISC_FEATURE

<222> (11)..(11)

<223> x = l or f

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<221> MISC_FEATURE

<222> (13)..(13)

<223> x = a or g

<220>

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<222> (14)..(14)
 <223> x = l, f, or i

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 <223> x = v or i

<400> 71

Gly	Xaa	Xaa	Xaa	Met	Xaa	Xaa	Gly	Asp	Xaa	Xaa	Ala	Xaa	Xaa	Xaa	Gly
1				5				10							15

<210> 72
 <211> 19
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 <213> Artificial - CY Motif 4

<220>
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 <223> x = g or n

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 <223> x = f, s, t, a, m, or q

<220>
 <221> MISC_FEATURE
 <222> (3)..(3)
 <223> x = r, v, q, n, s, or t

<220>
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 <222> (4)..(4)
 <223> x = k or r

<220>
 <221> MISC_FEATURE
 <222> (6)..(6)
 <223> x = w, i, v, or l

<220>
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 <223> x = e, a, or i

<220>
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 <222> (9)..(9)
 <223> x = t or s

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 <221> MISC_FEATURE
 <222> (10)..(10)
 <223> x = l or a

<220>
 <221> MISC_FEATURE
 <222> (11)..(11)
 <223> x = t, a, or g

<220>
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 <223> x = v, f, m, a, c, or g

<220>
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 <222> (14)..(14)
 <223> x = l, v, f, or w

<220>
 <221> MISC_FEATURE
 <222> (15)..(15)
 <223> x = a, v, or i

<220>
 <221> MISC_FEATURE
 <222> (16)..(16)
 <223> x = s or t

<220>
 <221> MISC_FEATURE
 <222> (17)..(17)
 <223> x = f, t, y, l, or a

<220>
 <221> MISC_FEATURE
 <222> (18)..(18)
 <223> x = l, v, f, t, or i

<220>
 <221> MISC_FEATURE
 <222> (19)..(19)
 <223> x = v or i

<400> 72

Xaa Xaa Xaa Xaa Ser Xaa Xaa Gly Xaa Xaa Xaa Met Xaa Xaa Xaa Xaa
 1 5 10 15

Xaa Xaa Xaa

<210> 73
 <211> 17
 <212> PRT
 <213> Artificial - CY Motif 5

<220>
 <223> Conserved Motif

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 <223> x = l or a

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 <221> MISC_FEATURE
 <222> (3)..(3)
 <223> x = s, a, t, l, or q

<220>
 <221> MISC_FEATURE
 <222> (4)..(4)
 <223> x = f, v, l, or i

<220>
 <221> MISC_FEATURE
 <222> (5)..(5)
 <223> x = s or a

<220>
 <221> MISC_FEATURE
 <222> (6)..(6)
 <223> x = r, p, f, l, k, w, or t

<220>
 <221> MISC_FEATURE
 <222> (7)..(7)
 <223> x = w, h, l, v, r, or a

<220>
 <221> MISC_FEATURE
 <222> (9)..(9)
 <223> x = i, t, v, l, or m

<220>
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 <223> x = l or i

<220>
 <221> MISC_FEATURE
 <222> (13)..(13)
 <223> x = t or s

<220>
 <221> MISC_FEATURE
 <222> (16)..(16)
 <223> x = l or i

<220>
 <221> MISC_FEATURE
 <222> (17)..(17)
 <223> x = g, v, or l

<400> 73

Xaa Glu Xaa Xaa Xaa Xaa Gly Xaa Asp Asn Xaa Xaa Val Pro Xaa
 1 5 10 15

Xaa

<210> 74
 <211> 22
 <212> PRT
 <213> Artificial - PL Motif 1

<220>
 <223> Conserved Motif

<220>
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 <222> (2)..(2)
 <223> x = s, i, n, or c

<220>
 <221> MISC_FEATURE
 <222> (5)..(5)

<223> x = l, v, or i

<220>

<221> MISC_FEATURE

<222> (8)..(8)

<223> x = i or v

<220>

<221> MISC_FEATURE

<222> (9)..(9)

<223> x = l, n, s, or t

<220>

<221> MISC_FEATURE

<222> (10)..(10)

<223> x = s, i, or v

<220>

<221> MISC_FEATURE

<222> (12)..(12)

<223> x = l, m, or v

<220>

<221> MISC_FEATURE

<222> (13)..(13)

<223> x = l, v, i, or f

<220>

<221> MISC_FEATURE

<222> (14)..(14)

<223> x = f or y

<220>

<221> MISC_FEATURE

<222> (15)..(15)

<223> x = v, m, l, f, or a

<220>

<221> MISC_FEATURE

<222> (16)..(16)

<223> x = l, i, v, s, or a

<220>

<221> MISC_FEATURE

<222> (17)..(17)

<223> xaa can be any naturally occurring amino acid

<220>

<221> MISC_FEATURE

<222> (18)..(18)

<223> x = w or none

<220>

<221> MISC_FEATURE

<222> (20)..(20)

<223> x = i or l

<220>

<221> MISC_FEATURE

<222> (21)..(21)

<223> x = f or v

<400> 74

Leu Xaa Arg Lys Xaa Val His Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Pro Xaa Xaa Ser
20

<210> 75
<211> 45
<212> PRT
<213> Artificial - PL Motif 2

<220>
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<223> x = a, s, or p

<220>
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<223> x = f, l, v, or i

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> x = v, a, t, or i

<220>
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<222> (5)..(5)
<223> x = p or i

<220>
<221> MISC_FEATURE
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<223> x = l, g, a, i, or f

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<223> x = v, l, i, or f

<220>
<221> misc_feature
<222> (9)..(9)
<223> x = g, i, v, c, or s

<220>
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<222> (10)..(10)
<223> x = l, v, i, f, or m

<220>
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<222> (11)..(11)
<223> x = r or k

<220>
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<222> (12)..(12)
<223> x = l, m, or v

<220>
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<222> (13)..(13)
<223> x = v, l, t, or i

<220>
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<222> (14)..(14)
<223> x = i, l, f, v, or t

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<222> (15)..(15)
<223> x = n, l, m, i, h, or y

<220>
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<222> (17)..(17)
<223> x = l or s

<220>
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<222> (18)..(18)
<223> x = s, g, or r

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<222> (19)..(19)
<223> x = i, v, l, or f

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<222> (20)..(20)
<223> x = s, y, m, i, w, l, v, t, or a

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<223> x = p, h, k, q, d, s, or t

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<222> (23)..(23)
<223> x = s, e, d, or q

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<222> (25)..(25)
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<220>
<221> misc_feature
<222> (26)..(26)
<223> x = i or v

<220>
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<222> (27)..(27)
<223> x = k, q, or n

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<223> x = v, m, or i

<220>

<221> misc_feature

<222> (30)..(30)

<223> x = t or s

<220>

<221> misc_feature

<222> (32)..(32)

<223> x = e, h, s, y, f, or n

<220>

<221> misc_feature

<222> (34)..(34)

<223> x = r, d, n, or k

<220>

<221> misc_feature

<222> (35)..(35)

<223> x = a, r, y, h, or p

<220>

<221> misc_feature

<222> (36)..(36)

<223> x = e, r, k, or l

<220>

<221> misc_feature

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<220>

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<222> (41)..(41)

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<222> (44)..(44)

<223> x = f or y

<400> 75

Ala Xaa Xaa Xaa Xaa Xaa Xaa Asn Xaa Xaa Xaa Xaa Xaa Xaa Gly
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ser Xaa Xaa Arg Xaa
20 25 30

Gly Xaa Xaa Xaa Glu Leu Leu Xaa Gly Pro Leu Xaa Tyr
35 40 45

<210> 76

<211> 36

<212> PRT

<213> Artificial - PL Motif 3

<220>

<223> Conserved Motif

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<222> (2)..(2)

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<222> (3)..(3)
<223> x = e, s, t, d, or q

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> x = i, v, or t

<220>
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<222> (7)..(7)
<223> x = g, a, or s

<220>
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<222> (8)..(8)
<223> x = m, i, or v

<220>
<221> MISC_FEATURE
<222> (9)..(9)
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<223> x = s, v, l, a, or c

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<221> MISC_FEATURE
<222> (13)..(13)
<223> x = m or n

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<222> (14)..(14)
<223> x = m or l

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> x = c or s

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> x = g or a

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<221> MISC_FEATURE
<222> (20)..(20)
<223> x = i, m, l, v, or f

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<221> MISC_FEATURE
 <222> (23)..(23)
 <223> x = i or v

<220>
 <221> MISC_FEATURE
 <222> (24)..(24)
 <223> x = m, v, i, or a

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 <221> MISC_FEATURE
 <222> (27)..(27)
 <223> x = k, r, or q

<220>
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 <222> (28)..(28)
 <223> x = f, l, or y

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 <221> MISC_FEATURE
 <222> (30)..(30)
 <223> x = s, t, k, q, r, g, or h

<220>
 <221> MISC_FEATURE
 <222> (31)..(31)
 <223> x = t, e, h, k, i, v, y, s, m, a, or l

<220>
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<220>
 <221> MISC_FEATURE
 <222> (34)..(34)
 <223> x = p or t

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 <222> (35)..(35)
 <223> x = y, h, or f

<400> 76

Trp Xaa Xaa Ser Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5 10 15

Gly Asp Gly Xaa Ala Asp Xaa Xaa Gly Arg Xaa Xaa Gly Xaa Xaa Lys
 20 25 30

Xaa Xaa Xaa Asn
 35

<210> 77
 <211> 30
 <212> PRT
 <213> Artificial - PL Motif 4

<220>
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<220>

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<222> (4)..(4)
<223> x = a, e, v, or i

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> x = i, a, v, or m

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> x = s, g, or a

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> x = f, a, or l

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<222> (11)..(11)
<223> x = i, t, v, l, or f

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<221> MISC_FEATURE
<222> (12)..(12)
<223> x = f, a, or s

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> x = f, l, m, v, or i

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<221> MISC_FEATURE
<222> (16)..(16)
<223> x = i, a, s, t, v, or l

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<222> (18)..(18)
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<222> (19)..(19)
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<221> MISC_FEATURE
<222> (20)..(20)
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<221> MISC_FEATURE
<222> (21)..(21)
<223> x = l or m

<220>
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<222> (22)..(22)
<223> x = y, h, w, c, l, f, or s

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<222> (25)..(25)
<223> x = s, a, h, q, or n

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<223> x = s, t, i, y, l, a, v, c, or w

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<221> MISC_FEATURE
<222> (27)..(27)
<223> x = l or f

<220>
<221> MISC_FEATURE
<222> (29)..(29)
<223> x = y, f, l, or h

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> x = l, i, m, v, or f

<400> 77

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Lys Ser Xaa Xaa Gly Ser Xaa Xaa Met Xaa Xaa Xaa Gly Phe Xaa Xaa
 1 5 10 15

Ser Xaa Xaa Xaa Xaa Tyr Xaa Xaa Xaa Gly Xaa Xaa
 20 25 30

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<210> 78
<211> 19
<212> PRT
<213> Artificial - PL Motif 5

<220>
<223> Conserved Motif

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<223> x = m, v, l, i, or f

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<220>
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<222> (2)..(2)
<223> x = v, i, l, or t

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<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> x = s or a

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<220>
<221> MISC_FEATURE
<222> (4)..(4)

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<223> x = m, i, v, f, or l

<220>

<221> MISC_FEATURE

<222> (5)..(5)

<223> x = v, a, t, or s

<220>

<221> MISC_FEATURE

<222> (6)..(6)

<223> x = a, s, or t

<220>

<221> MISC_FEATURE

<222> (7)..(7)

<223> x = t or a

<220>

<221> MISC_FEATURE

<222> (8)..(8)

<223> x = v, l, f, or i

<220>

<221> MISC_FEATURE

<222> (9)..(9)

<223> x = v or i

<220>

<221> MISC_FEATURE

<222> (11)..(11)

<223> x = s or c

<220>

<221> MISC_FEATURE

<222> (12)..(12)

<223> x = l, h, v, or i

<220>

<221> MISC_FEATURE

<222> (14)..(14)

<223> x = i or v

<220>

<221> MISC_FEATURE

<222> (15)..(15)

<223> x = t, s, or n

<220>

<221> MISC_FEATURE

<222> (16)..(16)

<223> x = d, t, s, m, k, or e

<220>

<221> MISC_FEATURE

<222> (17)..(17)

<223> x = q, d, e, h, r, l, or v

<220>

<221> MISC_FEATURE

<222> (18)..(18)

<223> x = l, i, or v

<400> 78

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Xaa Xaa Pro Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Asp

<210> 79
 <211> 233
 <212> PRT
 <213> Synechococcus sp.

<400> 79

Met Gly Ile Glu Gln Asn Asn Pro Met Ala Leu Pro Leu Trp Ile Ala
 1 5 10 15

Val Gly Leu Ala Ala Thr Tyr Leu Gly Ala Val Val Leu Thr Ala Glu
 20 25 30

Leu Leu Asn Arg Leu Ser Leu Ser Pro Ala Glu Val Thr Arg Lys Ile
 35 40 45

Val His Ile Gly Ala Gly Gln Val Val Leu Ile Ala Trp Trp Leu Ser
 50 55 60

Ile Pro Gly Trp Val Gly Ala Ile Ala Gly Val Phe Ala Ala Gly Ile
 65 70 75 80

Ala Val Leu Ser Tyr Arg Leu Pro Ile Leu Pro Ser Leu Glu Ser Val
 85 90 95

Gly Arg His Ser Tyr Gly Thr Leu Phe Tyr Ala Leu Ser Ile Gly Leu
 100 105 110

Leu Val Gly Gly Phe Phe Ser Leu Gly Leu Pro Ile Phe Ala Ala Ile
 115 120 125

Gly Ile Leu Val Met Ala Trp Gly Asp Gly Leu Ala Ala Leu Val Gly
 130 135 140

Gln Arg Trp Gly Arg His Arg Tyr Gln Val Phe Gly Phe Arg Lys Ser
 145 150 155 160

Trp Glu Gly Thr Leu Thr Met Val Leu Ala Ser Phe Leu Val Thr Val
 165 170 175

Val Phe Leu Ser Tyr Thr Phe Gly Phe Thr Val Ile Val Leu Val Val
 180 185 190

Ala Gly Thr Val Ala Ile Ala Ser Ala Gly Leu Glu Ser Phe Ser Arg
 195 200 205

Trp Gly Ile Asp Asn Leu Thr Val Pro Leu Gly Ser Ala Leu Ile Ala
 210 215 220

Trp Ala Gly Ser Tyr Leu Trp Leu Gly

225

230

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